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BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

C. W. BENSON

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1973

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PREFACE

There has been one change of importance in the present volume. As authorised at the 1972 Annual General Meeting (*Bull. Brit. Orn. Cl.* 92: 69–70), in order to offset a further increase in printing and distribution charges, publication of the *Bulletin* has been reduced from six to four numbers in the year, although the total number of pages has been maintained.

Those who have been kind enough to advise on individual papers include Mr. J. H. R. Boswall, Dr. L. H. Brown, Sir Hugh Elliott, Mr. D. Goodwin, Mrs. B. P. Hall, Dr. A. R. Phillips, the Rev. Dr. W. Serle, Prof. W. H. Thorpe, Mr. R. Wagstaffe and Dr. C. A. Wright. Again I am most grateful to Mr. K. E. Wiltsher, Manager of the Caxton and Holmesdale Press, assisted by Mr. P. G. Ball, for the regular production of the *Bulletin*. Also again I wish to thank Mrs. C. W. Benson, who has spent much time on proof-reading, and Mrs. M. Hawksley on the compilation of the Index to Scientific Names.

Appreciation of the assistance rendered by Dr. P. J. K. Burton in the finalisation of the *Bulletin* for December 1972 was expressed in the preface for 1972. The opportunity is now taken to thank him for the still more important part which he played in the production of the number for March 1973. Before my departure for Madagascar it was possible only to hand over edited typescript the equivalent of rather less than half of that number. All further editorial work was carried out by Dr. Burton, and I was only able to resume duty with the number for June.

C. W. BENSON

LIST OF MEMBERS AS AT 31st DECEMBER, 1973

(Compiled by the Hon. Secretary)

Amended as follows:

New Members

ARMISTEAD, H. T., M.S., 39 Benezet Street, Philadelphia, Pennsylvania 19118, U.S.A.
CARPENTER, C. P., 162 Wickham Way, Beckenham, Kent BR3 3AS.
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COLE, L. R., Commcen, R.A.F. Bawtry, near Doncaster, Yorkshire DN10 6JS.
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ELKINS, D. A., Little Tickeridge, Kingscote, East Grinstead, Sussex.
FARRAND, J., JNR., M.S., Ornithology Dept., American Museum of Natural History, Central Park West at 79th St., New York, N.Y. 10024, U.S.A.
FORRESTER, R. W., A.I.B., 29 Crandleyhill Road, Prestwick, Ayrshire KA9 2BE.
GINN, H. B., M.A., c/o British Trust for Ornithology, Beech Grove, Tring, Hertfordshire.
HARVEY, W. G., M.A., 17 Barton Road, Canterbury, Kent.
HOLMES, D. A., B.SC., The Old Rectory, Sudborough, Kettering, Northamptonshire.
HEIGHAM, J. B., M.A., African Timber and Plywood, P.M.B. 4001, Sapele, Midwest State, Nigeria.
JOBLING, J. A., 28 Fairweather House, Parkhurst Road, London N7 0NS.
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MEDWAY, LORD, PH.D, Great Glemham House, Saxmundham, Suffolk IP17 1LP.
MERIWANI, Y. N., Arasat Al-Hindiyah 389, Baghdad, Iraq.
NEIGHBOUR, Lieut.-Colonel J. R., 9 Coldstream Gardens, West Hill Road, London S.W. 18.
OLIVER, P. J., 53 Ember Farm Way, East Molesey, Surrey.
PERRIN, DR. M. R., PH.D., B.SC., 12 McGregor Crescent, Pinawa, Manitoba, ROE 1CO, Canada.
RIDLAND, J. R. J., Troswickness, Dunrossness, Shetland.
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TAYLOR, R. C., B.SC., Biology Dept., Liverpool Polytechnic, Byrom Street, Liverpool L3 3AF.
TEMPLETON, R. K., The Old Manse, Doune, Perthshire.
WHEELER, C. E., 3 Woodhurst Close, Cuxton, Rochester, Kent.
ZONFRILLO, B., 28 Brodie Road, Glasgow G21 3SB.

Resignations

GLENISTER, A. G.
MARKUS, M.
MEDHURST, H. P.

Deaths

The Committee regrets to record the deaths of the following members:—
Mr. R. P. BORRETT
Mr. K. D. SMITH

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by the Editor with the assistance of Mrs. M. Hawksley)

All generic and specific names (of birds only) are indexed. Only new subspecific names are included, and are indexed under the generic and the specific names.

Corrigenda

p. 11, line 47: 'rising', not 'tising'
p. 13, line 25: '*Motacilla*', not '*Moticilla*'
p. 14, table 4: '*hildebrandti*' not '*hildebranti*'
p. 15, table 5: '*Stilbopsar*', not '*Stilbospar*'; '*mediocris*' not '*mediocria*'.
p. 15, last line: 'observation', not 'obesrvation'; 'carried', not 'varried'.
p. 16, table 6: '*lacrymosum*', not '*lachrymosum*'
p. 17, table 7: '*Ptyonoprogne*', not '*Pytonoprogne*'
p. 19, line 30: '*Carduelis*', not '*Cardeuelis*'
p. 23, line 22: 'nesting', not 'nestling'
p. 29, line 13: '*bergii*', not '*bergi*'
p. 34, line 49: '*bougainvillii*', not '*bouganivillii*'
pp. 36–37: 'Olson', not 'Ohlson' (in paper by Frost & Siegfried)
p 43, line 33: 'east of', not '33° to'
p. 43, line 37: 'Amani', not 'Amari'
p. 44, line 20: '356', not '351'
p. 45, line 24: 'May', not 'Mat'
p. 53: In title to paper by Farrand & Olson, 'Malaysian', not 'Maylaysian'
p. 65, line 21: 'Rodents', not 'Rodent'
p. 88, line 9: To re-read 'same time, and integration is possible. Attention is drawn to'
p. 97: In title to paper by Larmuth, '*alba*', not '*alha*'
p. 153, line 27: '*Tchitrea*', not '*Tchitra*'
p. 172, line 8: '*aeneus*', not '*aenus*'

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Bulletin of the

British Ornithologists' Club

Edited by

C. W. BENSON

Volume 93 No. 1 March 1973

Committee

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 93 No. 1 Published: 20th March, 1973

The six hundred and eightieth meeting of the Club was held at the Café Royal, 69 Regent Street, London, W.1, on Tuesday, 16th January, 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E.; present 14 members and 8 guests.

The speaker was Mrs. M. K. Rowan, who gave an illustrated address on African brood parasites.

The Annual General Meeting of the Club will be held at the Café Royal, 68 Regent Street, London, W.1 on Tuesday, 8th May, 1973 at 6 p.m.

AGENDA

1. Minutes of the last Annual General Meeting.
2. Report of the Committee and Accounts for 1972.
3. The Bulletin.
4. Election of Officers:
   (a) The Committee proposes that Mr. R. F. Peal be re-elected Honorary Secretary.
   (b) The Committee proposes that Mr. P. Tate be re-elected Honorary Treasurer.
   (c) The Committee proposes that Mr. J. H. R. Boswall be elected a member of the Committee vice Mr. J. K. Adams.

by order of the Committee,
RONALD E. F. PEAL,
Honorary Secretary.

Report of the Committee for 1972

In January, March and May, the meetings of the Club were held at the Criterion, in Piccadilly Circus, but with the closing-down of the Criterion were transferred, for the July, September and November meetings, to the not far distant Café Royal. The total number of members and guests attending showed a welcome increase to 191 (138 in 1971), the highest since 1967 (193). This may be a reflection of the convenient situation and good value of the present venue; it is hoped that attendance will continue at the present level or show a further increase in 1973, since the favourable dinner-charge of £1.75 per head including service is partly dependent on that factor.

The Committee regrets to report the death of one member during the year, Mr. R. E. Heath. Ten new members joined the Club, but there were six resignations and the membership of 17 members has had to be terminated under Rule 4, a nett loss of 14 members. This may be regarded as a further, but it is to be hoped final, reaction to the increased subscription introduced in 1971, the total loss of membership over the two years being about 10%. It is important that this should now be made good as quickly as possible, since a membership of the order of 275 (about 50 more members than at

present), combined if possible with some increase in the number (at present about 80) of non-member subscribers, would certainly be the surest means of achieving financial stability.

At the Annual General Meeting on 9th May, Mr. P. Hogg was elected to the Committee in place of Mrs. J. D. Bradley, who retired by rotation. A major change approved by the Meeting and implemented by a decision of the Committee in October was that publication of the *Bulletin* (which in 1972 still comprised 172 pages and, technically, six issues, although there was in fact a 'June/August' double number) should be placed on a quarterly basis in 1973. One result of this economy measure is that the Audited Accounts for 1972 cannot be circulated with the present Report, but will have to be tabled separately at the 1973 Annual General Meeting. It is proposed, however, to revert in future years to the pre-1969 practice of publishing the Report and Accounts, as well as the Minutes of the A.G.M., in the *Bulletin*. The four pages used for this purpose will be additional, thus increasing the length of each annual volume of the *Bulletin* to 176 pages.

In general the Club's financial position showed a further slight improvement in 1972, but this, as explained at the Annual General Meeting (see *Bulletin* Vol. 92: 3 & 4), was largely due to the completion of the sorting of *Bulletin* stocks and the consequent resumption of back number sales (which included a considerable backlog of orders). It would be unrealistic to suppose that this level of sales can be maintained in future years, so that as already indicated some increase of membership, supplemented by the continuing exercise of the strictest economy (as exemplified by the quarterly publication of the *Bulletin*), remain essential.

A specimen of *Coua delalandei* (Temminck) (Cuculidae) in the Naturhistorisches Museum, Vienna (Austria)

by Herbert Schifter

Received 26th September 1972

Benson & Schüz (1971) have mentioned the existence of a specimen of *Coua delalandei* in the Staatliches Museum für Naturkunde, Stuttgart, not listed by Greenway (1967). There is also a mounted specimen of this species, believed to be extinct, in the Naturhistorisches Museum, Vienna. Neither was this specimen listed by Greenway (1967), nor by Luther (1970), although it was included by Sassi (1939) in his contribution on rare birds in the Vienna Museum.

The Vienna specimen of *Coua delalandei*, no. NMW 50810, was bought by Johann Natterer in 1840 during his journey to France and England, when he visited museum collections and dealers in natural history objects (Rokitansky 1957). Its acquisition number is 1844.I.252 in the collection brought back by Johann Natterer, comprising more than 500 specimens acquired from 28 different sources. At this time (1844) Joseph Natterer, the elder brother of Johann, was curator of the ornithological collections in the museum. Unfortunately the specimen does not bear an exact date of collecting. It is merely marked "1840", with the epithets "Evans" and "Madagascar". The name Evans does not appear in the list of specimens acquired, although it is mentioned at the end of the list together with the names of other dealers, with the remark that seven specimens were acquired from this source. So it is not possible to ascertain which are the other six specimens obtained from Evans, although it is likely that other specimens from

Madagascar in the collection were obtained from other dealers, such as Verreaux. The species are listed in a systematic sequence, so that the specimens from various sources are mixed. The date 1840 on the label of the *C. delalandei* cannot be regarded as that of collecting, but merely that of acquisition. Nevertheless it is possible that this specimen, and the one in Stuttgart, were collected later than 1834, although neither Jouanin (1962) nor Greenway (1968) could find evidence of one obtained later. The Vienna specimen is still in good condition, even though in the past it has undoubtedly been on public exhibit.

In the list of acquisitions another specimen appears under the name of this species, no. 1844.I.253. Sassi (1939) referred to it as having been perhaps lost or given away in exchange. I have ascertained that it is still in the collection. It is not however a *Coua delalandei* but a *C. serriana*. It was not identified to species originally, the name *C. serriana* having been added on the label later. As Pucheran's description of *C. serriana* is dated 1845, the specimen was received in Vienna before the species had been named. The name "Richard" appears on the original label, so that it does not appear to have come from the same source as the *C. delalandei*. Although it was without doubt originally mounted, it is now kept as a study skin.

To summarise, attention is re-drawn to the existence of a specimen of *Coua delalandei* in the Naturhistorisches Museum, Vienna, but there is no evidence that a second specimen was ever acquired, as has been claimed.

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Six species of birds new to Ethiopia

by J. S. Ash

Received 28th September 1973

Three of the following six species, not previously recorded in Ethiopia, have been discovered since the publication of the recent Checklist (Urban & Brown 1971); the other three were included just prior to going to press.

Calidris melanotos, American Pectoral Sandpiper: One was observed feeding at dawn along the western shore of the artificial Rift Valley lake, formed by a dam, at Koka (8° 27′ N, 39° 6′ E), Shoa Province, Ethiopia, on 18th March 1971. It had not been seen on the previous 13 days. I had another opportunity to look for it in the late afternoon, when it was found again in the same place and collected. It proved to be a male with regressed gonads, with wing-length 148 mm and weight 67.4 g. The specimen is deposited at the Smithsonian Institution, where Dr. George E. Watson has kindly confirmed the identification. There are now ten examples of this Nearctic species to be recorded on the African continent, and eight of them are from south of the Sahara. The previous records have been one each in Kenya,

Botswana and Rhodesia, two in Morocco and four in South Africa; all since 1949 (Ginn & Brooke 1971; Kemp 1972).

It seems likely that this and the other birds from south of the Sahara were displaced across the north Atlantic on autumn passage and continued south to overwinter in tropical Africa. If such displaced birds return north in the Palearctic spring, they could account for some of the spring occurrences in Europe. Excluding the two Moroccan records, it is of interest that the others, except for one bird in South Africa in December, occurred in March–May.

Chlorocichla flavicollis, Yellow-Throated Leaf-Love: The Pycnonotidae, of which about 33 species are currently recognized in East Africa, is a poorly represented family in Ethiopia. Until the present species was found, only three others were known: *Pycnonotus barbatus* common and widespread, *Andropadus importunus* in the south-east and *Phyllastrephus strepitans* common in parts of the south (Urban & Brown 1971). It is possible that others remain to be identified in the south-western forests (Brown & Urban 1970) and along the Wabi Shabelli in southern Ogaden (personal observations).

The present species was first found at Didessa (9° 02′ N, 36° 09′ E), Wollega Province, in a mist net on 25th July 1971. Since then six further examples have been caught as follows:—

Date	*Wing (mm)*	*Weight (g)*	*Time*	*Wing Moult*
25 July 70	106	44·9	1600	Nil
18 February 71	103	38·6	2130	
23 February 71	104	45·2	1100	
6 July 71	107	45·8	1130	
7 July 71	104	37·7	0700	
8 July 71	94	38·8	1700	Nil
9 July 71	98	40·7	1400	
6 February 72*	94	37·0	0830	Nil

*Retrap of the bird caught on 8th July 1971.

All the birds were caught along the sides of two small streams, along which there are a few trees and a thick underscrub, on the edge of the plateau above the Didessa River gorge. The species could be quite widespread in the abundant similar habitat in this region.

Two specimens examined at the British Museum by Mrs. B. P. Hall and Mr. Derek Goodwin are identified as *C. f. soror* but are stated to be greener on the back than neighbouring forms and show some approach to *pallidigula*, being a very little more yellowish on throat and underparts than most of the specimens of *soror* in the British Museum.

The Didessa birds represent a considerable extension of the known range of the species, north-eastwards into the Ethiopian highlands from Uganda.

Locustella fluviatilis, River Warbler: Urban & Brown (1971) stated that the River Warbler "should occur in Ethiopia but has not been recorded as yet". It is therefore of interest to record five examples in two autumns at Lake Abiata (7° 36′ N, 38° 40′ E) in the Ethiopian Rift Valley. Three of these were collected and one each deposited in the collections of the British Museum and Smithsonian Institution. The records are as follows:—

Date	*Age*	*Wing (mm)*	*Weight (g)*	*Time*	*Wing Moult*
29 October 70	1 Y	73	17·6	1730	Nil
30 October 70	?	77	18·5	1030	Nil
31 October 71	1 Y	69	14·2	1100	Nil
13 October 71	?	69	14·8	1100	Nil
22 October 71	?	74	18·0	1030	Nil

The timing of migration is of interest. In 1970 the area was worked from 10th October to 2nd November, and the birds were captured in the last three days of October. The 1971 records, when the area was worked from 12th October to 2nd November, were much earlier. R. J. Dowsett informs me (*in litt.*) that arrivals in Kenya seem to be about mid-December, and in Zambia later in the month, so that there may be an interval of about two months before these birds traverse the relatively short distance to their wintering areas. So far there is no evidence that this species occurs in Ethiopia in mid winter, in spite of extensive work in suitable habitat. The Abiata birds were found in thick herbaceous growth adjoining a river and lake.

Phylloscopus sibilatrix, Wood Warbler: It is curious that the Wood Warbler has not been recorded previously in Ethiopia (Urban & Brown 1971) for the species is well-known further west and south (Mackworth-Praed & Grant 1955) and at a roughly similar latitude in West Africa (e.g. Dowsett & Fry 1971). A specimen was netted, ringed and released, on 1st May 1971 in a small area of deciduous woodland located on the periphery of a flood plain of the River Awash where it flows through the Danakil Desert. The area is known as Bahadu (10° 05′ N, 40° 37′ E), near Gewani (=Gauani), Harar Province in eastern Ethiopia.

It was easily identified among the few Willow Warblers *Phylloscopus trochilus* by the moss-green coloration of its upper parts and yellow breast demarcated from the white of the rest of the underparts. Its diagnostic wing formula (short 1st primary, 2nd=4th, 3rd longest, 3rd and 4th only emarginated) confirmed this, and it weighed 11.2 g at 1130; wing-length 71 mm.

Acrocephalus baeticatus, African Reed Warbler: The African Reed Warbler was included in the recent Checklist (Urban & Brown 1971) on the basis of a specimen I collected in 1970. There are now records of six more birds from two localities, and it seems appropriate to summarize these here as they represent a notable eastwards extension of the species' known range.

Summary of records in chronological order:

Date	*Wing (mm)*	*Weight (g)*	*Time*	*Locality*
22 April 70	55	7.4	0930	Bahadu
13 March 71	55	7.3	1630	Koka
3 May 71	55	8.0	1630	Bahadu
6 May 71	56	8.1	0800	Bahadu
7 May 71*	55	8.1	0800	Bahadu
23 November 71	57	8.0	1030	Bahadu
27 March 72	56	7.9	0730	Koka
2 April 72	58	7.9	0830	Koka
4 April 72	56**	7.5	0730	Koka

*Retrap of the bird caught on 3rd May 1971.

**Retrap of the bird caught on 27th March 1972.

Bahadu (10° 05′ N, 40° 37′ E) is an area of permanent marshland on a flood-plain on the River Awash, where it flows through the western Danakil desert in eastern Ethiopia, close to Gewani in Harar Province. The area at Koka (8° 27′ N, 39° 06′ E), in the Rift Valley in Shoa Province, is thick lakeside acacia bush.

The first Ethiopian specimen was deposited in the British Museum where it was determined by Mrs. B. P. Hall as agreeing with the western form *A. b. cinnamomeus*. Prior to the discovery of the species in Senegal, its northern range was only known to extend from the region of Lake Chad to the Nile

Valley. With its occurrence in Ethiopia and Senegal its range extends across the width of Africa, although there is still a large gap between the Senegal and Nigerian localities.

The species is apparently rare in Ethiopia, for these are the only examples found in spite of intensive trapping and observation at Bahadu, Koka and other suitable localities at different seasons of the year. Because of their small size they may elude capture by slipping through all except small mesh mist nets, and so may be more numerous than the captures indicate.

Lonchura fringilloides, Magpie Mannikin: Two birds seen together briefly on 24th July 1971 at Didessa (9° 02′ N, 36° 09′ E) were judged to be this species. Two nets were placed in the vicinity, and caught three together later in the day. None of this species has been seen since during several visits extending over many weeks at different times of the year. Identification of one bird has been confirmed by Mrs. B. P. Hall at the British Museum. The weights of the three birds at 1400 were: 19.8, 21.3 and 20.2 g, and all had wing-lengths of 63 mm and were moulting their remiges.

The actual locality was on the plateau just above the east side of the Didessa River gorge in high grass (*Hyparrhenia* sp.) in a large area of cleared *Combretum/Terminalia* woodland. There were a very few scattered trees remaining. Mackworth-Praed & Grant (1955) give the range of the species in East Africa as southern Sudan, Uganda and Kenya to the Zambesi and Zanzibar Island; its range extends westwards as far as Senegal.

Summary: The first known occurences in Ethiopia of *Calidris melanotos*, *Chlorocichla flavicollis*, *Locustella fluviatilis*, *Phylloscopus sibilatrix*, *Acrocephalus baeticatus* and *Lonchura fringilloides* are detailed.

Acknowledgements: I wish to extend my thanks to Dr. George E. Watson of the Smithsonian Institution and to Dr. J. R. Schmidt of U.S. Naval Medical Research Unit No. 3, Field Facility, Addis Ababa, Ethiopia, under whose auspices this work was undertaken, and whom together with Mr. K. D. Smith commented on a draft of these notes; also to Mr. Derek Goodwin and Mrs. B. P. Hall of the British Museum (Natural History), through the courtesy of Dr. D. W. Snow, for their comments on the specimens they examined.

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Mackworth-Praed, C. W. & Grant, C. H. B. 1955. *African handbook of birds*. Series I, Vol. 2. London: Longmans.

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Possible Female Hybrids between *Bucephala islandica* and *clangula*

by Jon Fjeldså

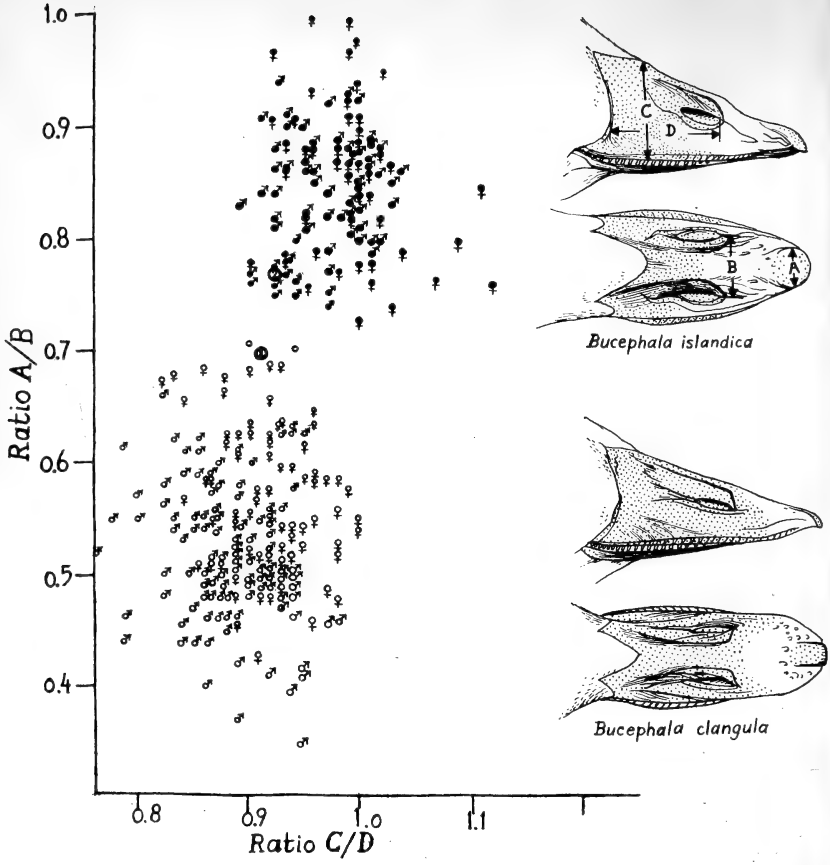
Received 2nd October 1972

Three seasons of field work at Lake Myvatn, Iceland, aroused my interest in the status of the Common Goldeneye *Bucephala clangula* in that area. State-

ments in the literature referring to this species breeding in Iceland are unreliable, and based mainly on one very doubtful sight record, and one wrongly identified specimen (Gardarsson 1968). However, in recent years males have been found to winter regularly in south-west Iceland and may be seen there together with unidentified females, or immature birds. It appears further from the intensive ornithological investigation of Lake Myvatn since 1960 (Gardarsson 1968, S. A. Bengtson, *pers. com.*, J. Fjeldså) that some males are present there every summer, mainly in flocks of male Barrow's Goldeneyes *Bucephala islandica*. I have never seen males of the Common Goldeneye mated to a female or defending territories in Myvatn. Nevertheless, I deemed it worth while to make a thorough search for female Common Goldeneyes or hybrid specimens in the large series from Myvatn at the Zoological Museum of the University of Copenhagen, collected mainly by R. Hjorring and G. Dinesen at the turn of the century. All measurements given below are from the Copenhagen collections.

At the first examination in September 1971 one female was put aside as a possible hybrid. After having read about a hybrid male *B. islandica x clangula* seen in Myvatn in 1970 by Bengtson (1972), I resumed my revision of the collection. Among a total of 288 Goldeneyes examined, two may be hybrids. These are a juvenile ♀, Merrymeeting Bay, Maine, U.S.A. 30.10.1922 (ZMUC 69022) and an adult ♀, Myvatn, Iceland, 27.6.1907 (ZMUC 59275). So far only hybrid males have been described in the literature (Snyder 1953: Schultz 1958: Jackson 1959: Bengtson 1972), probably because possible female hybrids will be virtually indistinguishable.

Skins of female and juvenile Common and Barrow's Goldeneyes are very similar in general appearance although there are several slight differences, discussed particularly by Brooks (1920). Barrow's are generally larger. In adult females the average wing length is 215 ± 3 mm, as against 211 ± 4 mm in *B. clangula americana*, and 199 ± 6 mm in *B. clangula clangula*. Generally, the female Barrow's have slightly darker heads with a slight purplish lustre; the neck is less white; the grey bar across the breast is broader; on the frontal median wing coverts the white fringes are mainly 5 mm broad, while in the Common Goldeneye some feathers have 8 mm long white tips. In juvenile Barrow's the corresponding feathers are fringed with light or pale mouse grey, not whitish. The black tipping of the greater wing coverts is an unreliable distinction. The most clear cut difference is the colour and the shape of the bill. In the female Barrow's pink coloration extends backwards to below the nostril. Seen from above the bill is more tapering. The ratio of bill-width adjacent to the posterior angle of the nostrils, to the width, 5 mm anterior to nostrils, averages 1.26 ± 0.05, while in the Common Goldeneye it averages 1.09 ± 0.03. There is a slight overlap. There is a lump on the culmen, anterior to the nostrils, although this character is shown also by some Goldeneyes. According to Ridgway (1887) the ratio of the height of the upper mandible at the base to the length, from loral feather edge to anterior edge of nostrils (see Fig.) $>$ is 1 in Barrow's, $<$ 1 in the Common Goldeneyes. The reliability of this character is disproved by Brooks (1920) and in the present paper (ratio C/D in Figure). The bill nail of adult Barrow's is 6.8 – 10.8, averaging 8.8 ± 0.7 mm wide, rounded to form a noticeable lump, while narrower 3.7 – 6.9, averaging 5.3 ± 0.6 mm, more parallel-sided and flat in Common Goldeneyes. The number of lamellae in the mandible (which cannot be counted accurately as most anterior ones are rudimentary) is 29–33, averaging 31.0 in Barrow's, while at 33 – 37, in Com-



Figure

Scatter diagram for the relative height of the bill (C/D) and the relative breadth of the bill nail (A/B) of Barrow's (solid symbols) and Common Goldeneyes (open symbols) examined. Pulli, juveniles and adults are lumped together. It is indicated on the drawing of the Barrow's bill, how the measurements were taken. Two possible hybrid females are indicated by figures 1 and 2.

mon Goldeneyes it averages 35.3. Gardarsson (1968, fig 1) separated the species by plotting the width of the bill nail against the width of the bill, adjacent to the anterior end of the nostrils. As the bill is more tapering in Barrow's, I found the ratio of bill nail width, to the width between the anterior angle of the nostrils, a still more reliable character. The distance between the nostrils is similar in both species. In the diagram all specimens examined, including pulli and juveniles, are plotted according to the above mentioned ratio, and the ratio of Ridgway. It is indicated on the drawing of the Barrow's bill, how the measurements are taken. Sliding callipers, accuracy 0.1 mm, were used. Specimens found near the dividing line were measured up to ten times. Specimens which are by colour of bill and plumage, best referred to Barrow's, are plotted by solid symbols, those best referred to Common Goldeneye, by open symbols.

The two species appear to be well separated in this way. The dots at the top of each "dot-swarm", are mainly downy young, or juveniles not fully grown, and deserve therefore, less attention. Only two specimens already mentioned remain problematic by an odd combination of bill- and plumage-characters. These are indicated by figures on the diagram.

Specimen No. 1, ad. ♀ from Myvatn (ZMUC 59275), with brood patch, would be placed with "*islandica*" on colour and a wing length of 217 mm. It corresponds well to other *islandica* females shot in midsummer. The white edges of the median wing coverts average 6.5 mm wide, i.e. slightly more than in *islandica;* but still the closed wing gives a more black and white variegated, less white appearance. However, the bill nail is only 6.8 mm wide (ratio A/B 0.70), elevated, but with distinct parallel sides; the bill has not the typical tapering; ratio of bill width adjacent to posterior angle of nostrils to the bill-width, 5 mm anterior to nostrils, is 1.18, which is at the lower extreme of Barrow's. The mandible has 34 lamellae, and this is the largest number found in specimens labelled as Barrow's.

Specimen No. 2, juv. ♀ from Maine (ZMUC 69022), has mainly "*clangula americana*" characters; wing length 209 mm; narrower breast bar; the median wing coverts with 4 mm wide tops of greyish white; the larger coverts with narrow fuscous tips; bill sides parallel, although the ratio given for tapering is 1.14, which is at the upper extreme of Common Goldeneye. The nail is 6.8 mm broad (ratio A/B 0.76), and the mandible has 34 lamellae.

Among two hybrid males collected (Snyder 1953; Jackson 1959), one had a bill corresponding to that of the Myvatn ♀, the other one a bill corresponding to the Maine juv. ♀.

Judging from these combinations of characters the above females may be hybrids, although this cannot, of course, be stated with certainty. They have one thing in common. They are from regions where only one Goldeneye species is known to breed definitely, but where the other species is a regular visitor. This applies also to the male hybrids described in the literature (British Columbia, Seattle, New Brunswick, Myvatn). Barrow's Goldeneye breeds mainly on the Pacific Coast and in the Rocky Mountains of Canada; while in the coniferous zone east of the mountains it is replaced by the Common Goldeneye; and there are very localised populations of Barrow's only north of the timber line in northern Labrador, and maybe in the Godthab district in West Greenland, and 800–1,000 pairs at Lake Myvatn. No abnormal specimens were found in the series from east of the Atlantic, where stragglers of Barrow's are extremely rare. Thus, hybrids may arise occasionally by males forming mixed pairs in regions where they do not find conspecific prospective mates.

Thanks are due to Mrs. F. M. Benson and to Mr. R. Wagstaffe, for kindly checking the text of this paper, and to Dr. F. Salomonsen for critical discussion.

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The Cape Eagle Owl *Bubo capensis* in Mocambique

by H. D. Jackson

Received 13th October 1972

When Benson & Irwin (1967) reviewed the distribution and systematics of *Bubo capensis*, the species had not been recorded satisfactorily in Moçambique. It had, however, been taken in the Inyanga highlands of Rhodesia not far from the Moçambique border and this led Clancey (1971) to postulate its occurrence along the entire mountainous part of the Moçambique/Rhodesia frontier area. This frontier includes the Chimanimani Mountains, a rugged range of quartzite and micaceous schist, and when visiting these mountains in May 1972 I indeed heard *B. capensis* calling near the Mevumosi River in Moçambique (Jackson, in press). Confirmation of its presence in the Chimanimani Mountains was obtained when I secured a specimen on 11th August 1972 near the Mucrera River, Moçambique, at 19° 53′ S., 33° 03′ E., and altitude 1,500 m. Two or three pairs were heard calling frequently within 5 km of my camp during the four weeks that I was there.

The specimen is an adult female taken in breeding condition, the largest oocyte measuring 6 mm and the brood patch being devoid of feathers. Wing (409 mm) and tail (232 mm) measurements together with the reduction of barring on the lower abdomen and thighs show it to be *B. c. mackinderi* as would be expected on distributional grounds (see Benson & Irwin, 1967). It weighed 1,540 g (to the nearest g on an Ohaus Dial-O-Matic).

An entire leg of the Red Rock Hare *Pronolagus crassicaudatus* was found in the bird's oesophagus; I am obliged to V. J. Wilson, National Museum, Bulawayo, for confirming the identity of the prey. The enormous foot of *B. capensis* suggests that it habitually preys on animals of this size; the maximum spread of the toes, measured in life from the tip of the middle claw to the tip of the hind claw, was 103 mm. Its foot is considerably larger than that of *B. africanus* and is comparable with that of the African Hawk Eagle *Aquila fasciata*. *Bubo capensis* is clearly a highly rapacious species.

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The breeding seasons of birds in the Arusha National Park, Tanzania

by J. S. S. Beesley

Received 4th October 1972

INTRODUCTION

This paper is intended to be a companion to a paper by Beesley (in press), in which the birds and their habitats in this area were described in detail. Breeding records were few, however, and during the thirteen months between 1st April 1971 and 30th April 1972 a great deal of effort was put into finding nests. Of the 1,255 records in the present paper, 70% were found during this period. It was fortunately a fairly typical period weather-wise, and in other "normal" years the breeding seasons should be similar.

All nests recorded were seen and inspected by myself, although most of those seen after 1st April 1971 were found by members of the staff of the Arusha National Park, and I am especially indebted to the efforts of Chacha Mangeny, Silvesta Matacha, Sifaeli Mangure, Shauri Sandu and Anton Wambura. For comments and advice on this paper I am grateful to Sir Hugh Elliott and C. W. Benson.

The specific data are summarized by months in tables and the method used by Benson (1963) has been followed, in which each record has been referred to the month when egg-laying was calculated to have commenced. All records are based on eggs or nestlings, except in some cases when small nidifugous young were seen. Records of colonial breeders (marked in the tables by "C") have been treated collectively, e.g. one colony of fifteen pairs of nesting swifts would be set down as one record. At the foot of each table, of which there is one for each of seven groups, the records have been converted into percentages which are rounded off to the next whole number, i.e. 6.12 would be entered as 7. Any percentage less than five is omitted and peak figures are shown in bold. Rainy seasons have been outlined by vertical lines enclosing them. The nomenclature follows Mackworth-Praed & Grant (1952–55).

THE PHYSICAL BACKGROUND AND OTHER FACTORS

The following short description is based on Beesley (in press). The Arusha National Park has an area of about 130 sq. km, and is situated on the eastern side of Mt. Meru, in north-eastern Tanzania at ca. 3° 15. S., 37° 00′ E. Altitude ranges from 1,400 m to 4,560 m, resulting in many habitats, which are listed below:—

1. Forest and closed woodland ranging from a dry evergreen forest at 1,450 m to a wetter montane forest up to 2,600 m.
2. Lakes and swamps, either alkaline or fresh, at 1,500 m.
3. Secondary woodlands with an understorey of scrub represented by three main types all within an altitidunal range of 1,400 m to 1,700 m as follows:—
   a. Groves of *Acacia xanthophloea*.
   b. Scattered remnant cedar trees *Juniperus procera* with an understorey of *Dodonea viscosa* scrub.
   c. Copses of *Croton macrostachyus* with an understorey of "sage-bush".
4. "Sage-bush": A mixture of several species of soft, aromatic shrubs and scattered trees with a ground herbage of tussock grasses which replaces destroyed forest below 1,700 m.
5. Heath zone at 2,300 to 3,000 m, above which is almost bare rock.
6. A diversity of small but important habitats: Streams, rain-water pools, lake shores, grassland, forest-edge, buildings, cliffs and river/road banks.

It should be noted that a very large proportion of the nests were found below 1,700 m in types 3 and 4.

The climate is characterized by two rainy seasons, the short rains of November and December and the long rains of mid-March to early June. The short rains are generally light and occur when temperatures are tising They are followed by the short dry season of January, February and early March, a period which is, however, seldom rainless but is the warmest time of the year. The long rains are heavy and temperatures begin to drop in mid-April. June to August is the coolest time, with mist and cloud usually occurring until late morning, sometimes accompanied by light showers. September and October are the dryest months, although a little rain is

recorded, and temperatures begin to rise in September. At this latitude daylight length varies minimally and its effect on birds can be discounted. The following figures show the rainfall at a station in the Park at 1,700 m for the year 1st May 1971 to 30th April 1972, and the mean monthly temperatures of Arusha township which lies at 1,400 m on the southern slope of Mt. Meru:—

	M	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*	*J*	*F*	*M*	*A*
Rainfall (mm)	312	90	57	37	14	7	100	100	10	64	243	243
Temperature (C.)	19	18	17	17	19	21	21·5	21·5	21	22	21·5	21

The results of this comparatively equable climate is that the vegetation remains green for most of the year, very few of the trees losing their leaves and the grass drying up for only one to two months. Due to a policy of fire-protection, fires have been very limited in number and extent for several years. There are two periods of grass-growth with the two rainy seasons, the main growth being during the long rains. The variety of tree species and habitats probably results in several flushes of leaf-growth. Flowers, fruit and cover are always available, and insects, while not appearing in a sudden, remarkable flush with the first rains as in dryer areas, are always abundant, more so during the rains and less so during the cold season of June to August.

The foregoing is in contrast to some other areas in Africa, e.g. Zambia, where the seasons are much more clearly defined, and the nesting data presented here are therefore much more difficult to interpret. It is evident, especially with closely related species, that detailed knowledge of food requirements, both for parents and their young, would help explain their breeding seasons.

BREEDING RECORDS IN TABLES BY GROUPS

The seven groupings used by Benson (1963: 624) are followed, but not in the same order. The Nectariniidae are included either in the Forest group or Miscellaneous groups because of their diverse habitats and breeding seasons.

TABLE 1 WATER AND SWAMP BIRDS

Species	No. recs.	*J*	*F*	*M*	*A* rains	*M*	*J*	*Jl*	*A*	*S*	*O*	*N* rains	*D*
					Records by months								
Poliocephalus ruficollis	17	1	1		2	4	2	4	2				1
Ephippiorhynchus senegalensis *	2				1	1						1	
Hagedashia hagedash	2			1									
Thalassornis leuconotus	6	1							1		3	1	
Aythya erythrophthalma	1						1						
Anas sparsa	1						1						
Anas capensis	3					1				2			
Anas punctata	1								1				
Anas erythrorhynchus	4	1		1					2				
Alopochen aegyptiacus	9			1		1	2	1	2	2			
Plectropterus gambensis	9		1	2	1	2	3						
Limnocorax flavirostra	3	1		1				1					
Gallinula chloropus	2			2									
Fulica cristata	3								1	2			
Actophilornis africanus	28				11	11		3		1	1	1	
Balearica regulorum	5		1	2	2								
Motacilla clara	3		1								2		
Cisticola galactotes	5					2	1					1	1
Totals	104	4	4	10	17	22	10	9	9	7	6	4	2
Percentages				**10**	**17**	**22**	**10**	9	9	7	6		

TABLE 2 RAPTORS

Aquila rapax	2				2						
Terathopius ecaudatus *	2		1	1							
Cuncuma vocifer *	5		1	2		1	1				
Buteo rufofuscus	19	1	3	2	5	3		2	2		1
Buteo oreophilus *	2								1	1	
Falco peregrinus	1							1			
Bubo lacteus	1						1				
Totals	32	1	5	5	7	4	2	3	3	1	1
Percentages			**16**	**16**	**22**	**13**	7	10	10		

* — all records from the same nest in different years

Water and Swamp Birds (Table 1): There are no records of the Ardeidae and few of the smaller Anatidae and Rallidae, but such as there are show a long season of seven months during the long rains and following months when non-permanent water-levels are still high (there are very few records from the permanent alkaline lakes), thus agreeing with Benson (1963). Naturally the length of the season varies with the amount of rainfall, and the three records of *Thalassornis leuconotus* in October were obtained in a year of high rainfall when the fresh-water pools remained for long at a high level. The Rallidae, also *Poliocephalus ruficollis* and *Actophilornis africanus*, all of whose numbers fluctuate considerably during the year and from year to year, have some diversity in their collective breeding times depending on the rainfall, although *P. ruficollis*, which is always present, shows a definite peak from April to August. The resident pair each of *Ephippiorhynchus senegalensis* and *Balearica regulorum* appear to keep to one rather short season. *Moticilla clara*, whose habitat is perennial streams, has two breeding periods similar to the insectivorous birds (Table 6) in October and February, thus differing from most other water-birds. *Cisticola galactotes* is difficult to place, perhaps because of inadequate data.

Raptors (Table 2): Here, despite the few records, there seem to be two seasons indicated. *Aquila rapax*, *Terathopius ecaudatus*, *Cuncuma vocifer* (of which there is only one pair of each in the Park) and most of the *Buteo rufofuscus* lay from March to June to rear young in the damp, cool months of June to August, while *Falco peregrinus*, *Buteo oreophilus* and a few of the *B. rufofuscus* lay from August to October and rear young in the warm, dry or warm, wet period before and during the short rains. It is difficult to see the advantage of laying in the earlier, wetter part of the year, as feeding nestlings takes place while cover to conceal the prey is still thick. The prey-cover factor does not affect *C. vocifer* but *B. rufofuscus* preys mainly on mole-rats *Tachyoryctes* sp. in the Park. Perhaps these animals surface more frequently when the soil is damp and sticky. The data for *A. rapax* and *T. ecaudatus* are equally puzzling. There are plenty of adult grasshoppers and juveniles of grass-nesting birds at this season, but reptilia and small mammals must be difficult to see. Certainly these two species hunt a great deal in the dryer short-grass plains beyond the Park borders, where *A. rapax* also breeds at this season. Possibly the Park *A. rapax* follow the rhythmn of those extra-territorial birds. Referring to Benson (1963) and Benson *et. al* (1964), in Rhodesia and Zambia *A. rapax* lays in the dry season in contrast to the Park birds, but there is agreement in *T. ecaudatus* laying during the rains. The owl, *Bubo lacteus*, fed its nestling during September and October, when some ground cover had dried or withered, and rising temperatures would have increased the activity of prey.

Grass Birds (Table 3): The majority of the records show, as may be expected, that nesting takes place after the short rains and during the long rains when the grass has grown, providing nesting material, cover and food. With a few species there is some indication of two peaks. The Cisticolas, also *Chloropeta natalensis*, *Prinia subflava* and *Melocichla mentalis*, are mainly long rain breeders, but occasionally nest in the short rains.

TABLE 3 GRASS BIRDS

Species		No. recs.	Records by months *J*	*F*	*M*	*A* rains	*M*	*J*	*Jl*	*A*	*S*	*O*	*N* rains	*D*
Centropus superciliosus		2			1								1	
Chloropeta natalensis		11				5	5	1						
Cisticola chiniana		4			2	2								
Cisticola woosnami		5			2	1							1	1
Cisticola cantans		15		2	2	1	5	2	3					
Cisticola brachyptera		3		1	2									
Prinia subflava		16	1			3	6	2	3				1	
Melocichla mentalis		7			2	1	2				2			
Ploceus spekei	C	4		1	2	1								
Ploceus intermedius	C	5		2	2	1								
Ploceus castaneiceps	C	8	1			1	1				1	2	1	1
Hyphanturgus ocularis		14	3			1		1	1			5	3	
Othyphantes reichenowi		15	1	3	1	1	1	5	1			1		1
Amblysopiza albifrons	C	6	1	1		1	2							1
Euplectes capensis		2				1	1							
Coliuspasser laticauda		12	3	1	1	5	2							
Spermestes cucullatus		5	1	1				1			1			1
Spermestes nigriceps		8	2	1	1		1	2		1				
Lagonosticta rubricata		3	1					1	1					
Coccopygia melanotis		4						3	1					
Estrilda astrild		14		1	2	2	4	5						
Totals		163	14	14	20	27	30	23	10	1	4	8	7	5
Percentages			9	9	**12**	**17**	**19**	**14**	6			5	5	

TABLE 4 GROUND BIRDS

Species	No. recs.	*J*	*F*	*M*	*A*	*M*	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*
Numida mitrata	6		3	1		1							1
Francolinus hildebranti	2								1	1			
Francolinus squamatus	12		1						2	5	2		2
Burhinus capensis	3		1		1					1			
Charadrius pecuarius	13	2	1	1			2			4	1	2	
Charadrius tricollaris	6	1	1				1	1	2				
Stephanibyx coronatus	2								1	1			
Hoplopterus armatus	9					2	6	1					
Caprimulgus fraenatus *	8	1	2	2						1	1	1	
Caprimulgus poliocephalus	5										2	3	
Caprimulgus fossii	1									1			
Mirafra africana	4		1	1	1	1							
Anthus similis	13	2	2	3	2			1			2		1
Macronyx aurantiigula	7	2	2			1		1		1			
Saxicola torquata	18	3	2							2	4	4	3
Totals	109	11	16	8	4	5	9	4	6	17	12	10	7
Percentages		**11**	**14**	7		5	9		6	**16**	**12**	**10**	7

* — This name follows White (1965)

Of the Ploceidae, *Amblyospiza albifrons* and *Coliuspasser laticauda* begin to nest in the short dry season and continue until the end of the long rains, but *Ploceus spekei*, *P. intermedius* and *Euplectes capensis* have one short season, almost entirely during the long rains. *Ploceus spekei* and *P. intermedius* are

conspicuous colonial nesters, and any nesting at other times would not have been missed. Perhaps as with *Quelea* spp. the young are fed much on young grass seeds, or the type of grass used for building does not attain sufficient length until late in the rains. *Ploceus castaneiceps*, *Hyphanturgus ocularis* and *Othyphantes reichenowi* probably breed at any time of the year, contrasting markedly with the other Ploceidae. *Estrilda astrild* breeds almost entirely in the long rains, and *Coccopygia melanotis* follows at the end of the rains in rather cool conditions.

Ground Birds (Table 4): The two dryest periods of the year, January-February and September-October, serve as the main breeding seasons for these birds as a whole, although probably due to the porous, quick-draining soil of the Park, some breeding takes place even during the rains. Some species apparently have only one breeding season, and others, for example the Caprimulgidae, have two, both avoiding the rains. *Hoplopterus armatus* is noteworthy, laying in the cool damp month of June to rear young in cold July. *Mirafra africana* resembles the grass-birds in breeding during the long rains, thus agreeing with Benson (1963). However, *Macronyx aurantiigula* records differ from the *Macronyx* species of further south (Benson *et al.* 1964) in nesting mainly outside the rains. *Macronyx aurantiigula* and *Mirafra africana* both occupy similar habitats in the same areas of the Park, bush-scattered and/or tussock grassland. *Saxicola torquata* has an extended season of six months when, it would appear, two broods are raised. Evidently it can breed in the short rains, but not the long rains.

TABLE 5 FOREST BIRDS

Species	No. recs.	Records by months *J*	*F*	*M*	*A*	*M*	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*
					rains							rains	
Tympanistria tympanistria	1				1								
Tauraco hartlaubi	8	1			1				1	1	1	2	1
Halcyon albiventris	6		1	1		1				2		1	
Melittophagus oreobates	4									2			2
Tockus alboterminatus	1									1			
Lybius melanopterus	12	1	1	1		1	1			2	2	3	
Buccanodon leucotis	20	3						2	1	2	9	3	
Arizelocichla nigriceps	3									1	1	1	
Arizelocichla milanjensis *	2							1	1				
Alseonax adustus	6	2	1								3		
Tchitrea viridis	13		2	1						1	3	2	4
Turdus olivaceus	3				1					1	1		
Cossypha semirufa	2			1	1								
Seicercus umbrovirens	1												1
Psalidoprocne holomelaena	5				1				1	2			1
Dryoscopus cubla	2									1	1		
Pholia sharpii	1										1		
Onychognathus walleri	2									2			
Stilbospar kenricki	12	1			1	2			1	1	5	1	
Zosterops eurycricotus	2					1						1	
Nectarinia tacazze	4	2											2
Cinnyris mediocria	4									1	2	1	
Cyanomitra olivacea	5	1	2	1									1
Nigrita canicapilla	4								2	1	1		
Serinus burtoni *	2											2	
Totals	125	11	7	5	6	5	1	3	7	21	30	17	12
Percentages		9	6		5				6	**17**	**24**	**14**	**10**

* — Records based on obesrvation of food and nesting material being varried

Forest Birds (Table 5): The breeding season of the majority of this type agree with comments by Moreau (1950) and Benson (1963) in that there is one fairly well-defined season avoiding the heavy rains. Nesting begins in September when the forest is comparatively dry and the temperature starts to rise. Maximum laying is in October, which is warmer, and most young are being fed on the flush of insects during the rains of November and December. There are a few apparent exceptions. *Alseonax adustus* and *Tchitrea viridis* have a second season in January, February and March, and *Cyanomitra olivacea* has its only season at this time.

TABLE 6 INSECT AND FRUIT EATING BIRDS OF WOODLAND AND SECONDARY BUSH

Species	No. recs.	Records by months *J*	*F*	*M*	*A* (rains)	*M*	*J*	*Jl*	*A*	*S*	*O*	*N* (rains)	*D*
Eurystomus glaucurus	10									3	4	3	
Halcyon chelicuti	5		1	1						2		1	
Melittophagus bullockoides C	6						1	1		2		2	
Melittophagus pusillus	9						1	1		1	4	2	
Phoeniculus purpureus	3		1							2			
Rhinopomastus cyanomelas	2		1									1	
Colius striatus	72	12	15	9	14	1		1		3	4	11	2
Lybius leucocephalus	2	2											
Tricholaema lachrymosum	48	8	12	11	1	2	1	1		2	3	6	1
Campethera nubica	5		1						1	2	1		
Campethera abingoni	2	1	1										
Dendropicos fuscescens	1											1	
Thripias namaquus	3					1	1			1			
Mesopicos goertae	3									2	1		
Motacilla aguimp	4	1		1				1		1			
Pycnonotus barbatus	155	33	38	19	8	12			1	7	16	19	2
Dioptrornis fischeri	33	12	3	1	3					5	7	1	1
Batis molitor	8	2	1								2	3	
Apalis flavida	25			1	1	5		1	2	6	8		1
Phyllolais pulchella *	2								1			1	
Sylvietta whytii	10	1		1						2	2	2	2
Camaroptera brevicaudata	4				3		1						
Campephaga sulphurata	3				1								2
Nilaus afer	1									1			
Lanius collaris	25	4	3	5	1		2			1	4	3	2
Laniarius aethiopicus	7	1	2	1		1					2		
Tchagra senegala	4		1				1					1	1
Tchagra australis	14		3	5		1	2			1			2
Chlorophoneus sulfureopectus	2	1									1		
Parus fringillinus	3	1								2			
Oriolus larvatus	6				1	1				1	2	1	
Onychognathus morio	6		2	1								2	1
Buphagus africanus	2	2											
Buphagus erythrorhynchus	7	2	1								2	2	
Totals	492	83	86	56	33	24	10	6	5	47	63	62	17
Percentages		**17**	**18**	**12**	7	5				**10**	**13**	**13**	

* — Nest-building observed only

Insect and Fruit-eating Birds of Woodland and Bush (Table 6): The two seasons are exemplified well here, one before and during the first part of the short rains and the other in the hot, short dry season and beginning of the

long rains. Of the birds for which there are sufficient records, 60% have two seasons and 36% have one main season with a few nestings at other times. Only one bird, the migrant *Eurystomus glaucurus*, has one definite season. It arrives in August and leaves in January–February. No other species in this table is known to be migratory.

Species with the most records have their maximum breeding during the second period, i.e. in the short dry spell preceding the long rains, but a few show preference for the first period, i.e. before and during the early part of the short rains. In the case of *Pycnonotus barbatus* there is an indication of a slight recrudescence of nesting in May, but this may relate to a second attempt by nest-predated birds.

It is interesting that *Thripias namaquus* starts nesting in May, thus avoiding competition with other Picidae. The two species of Meropidae begin during the cold damp months of June and July. Also it is surprising that *Apalis flavida* has its second peak in May, rearing young in the cool month of June.

TABLE 7 MISCELLANEOUS GROUPS

Species	No. recs.	Records by months *J*	*F*	*M*	*A* rains	*M*	*J*	*Jl*	*A*	*S*	*O*	*N* rains	*D*
Columba arquatrix	4					1					3		
Streptopelia semitorquata	39	2	5	5	2	4	3	1	1	3	8	4	1
Streptopelia lugens	1						1						
Streptopelia capicola	2							1	1				
Stigmatopelia senegalensis	1										1		
Treron australis	9	1	3								1	3	1
Agapornis fischeri	7		3		2			2					
Apus caffer	1					1							
Apus niansae C	3				3								
Apus horus C	5				3							2	
Hirundo abyssinica	3	1		2									
Hirundo senegalensis	7			1	1		2			1		2	
Hirundo smithii	19		2	1		4	2	1	2	2	5		
Pytonoprogne fuligula	9		3	1	2					1	2		
Riparia plaudicola C	7				2	5							
Serinus flavivertex	4					1	3						
Serinus striolatus	15	5	3	1	2	1	1	1					
Carduelis citrinelloides	17	4			3	3	3					2	2
Nectarinia kilimensis	9	1		1	4		1				1	1	
Chalcomitra amethystina	18	2		3				1		2	4	3	3
Chalcomitra senegalensis	14	1	1	2	2	2				1	2	2	1
Anthreptes collaris	13	2	1	1	1	1		2			3	2	
Cinnyris venustus	44	9	10	2	4	1	1	9	4				4
Totals	251	28	31	20	31	24	17	18	8	10	31	21	12
Percentages		**12**	**13**	8	**13**	**10**	7	7			**13**	9	5

Miscellaneous Groups (Table 7): Of the Columbidae there are only three species, all mainly arboreal, with sufficient records for interpretation. *Treron australis* has one season with apparently two peaks, one in November and another in February. *Streptopelia semitorquata* nests throughout the year as further south (Benson *et al.* 1964), but with peaks in October and February-March, months which produce abundant fruit, insects and seeds.

Discounting *Apus caffer* for which there is but one record, only two species of Apodidae have been found nesting in the Park. *Apus horus* and *A. niansae* both breed in April at the height of the long rains in high river-banks, which is puzzling and agrees with Benson's remarks (1963) (*A. niansae* also breeds in cliffs higher up the mountain). As these birds are colonial nesters it is hardly possible that they were overlooked at other times of the year. Both these species feed a good deal over the lakes, and perhaps there is a greater availablity of food over these waters at this time. *A. horus* bred again, at least during two years, in November when insect-life is known to be abundant.

The Hirundinidae show diversity in their seasons. *Ptyonoprogne fuligula* has two, similar to birds of group 6. *Riparia paludicola*, like the Apodidae, breeds in river-banks (but lower ones) during the long rains when there is danger of collapsing banks, contrary to the records in Benson (1963). *Hirundo smithii*, generally using buildings, nests in any month (one nest was used for four broods in one year) and *H. senegalensis*, either taking over nests of *H. smithii* or building in trees, has the same tendency. The colder season does not deter these birds from nesting, so evidently insect-life is still fairly abundant.

The Fringillidae are puzzling, as in Zambia and Malawi. *Serinus flavivertex* descends from the higher levels of Mt. Meru to breed among scattered juniper trees at 1,500 m during the wet cool months of May and June. *Carduelis citrinelloides* has two seasons, each during a rainy season, one of which is synchronous with *S. flavivertex*. *Serinus striolatus* begins with its peak in January and continues in a lesser degree for the following six months. *C. citrinelloides* and *S. striolatus* overlap somewhat and occupy the same habitat (sage-bush), but the latter tends to nest lower down in the shrubs and in areas where there are more grass tussocks.

The five species of Nectariniidae collectively breed in every month and there is some overlapping of the peaks. The main area of overlap is in October and November when three species show much activity. Two of them, *Anthreptes collaris* and *Chalcomitra amethystina*, feed and nest mainly in forest-edge and woodland. Feeding appears to take place on two levels, that of the former in the lower storeys and of the latter in the higher storeys. The third, *Chalcomitra senegalensis*, feeds and nests to a greater extent in the low secondary sage-bush. *Nectarinia kilimensis* and *Cinnyris venustus* also breed in this latter biotope, but *N. kilimensis* shows a peak in April and *C. venustus* two peaks, one in January and February and another in July, both being seasons when several components of the sage-bush are in flower.

CLUTCH SIZES

Clutch size data from the period 1st April 1971 to 30th April 1972 have been extracted for some species, which are listed below. Comapring these with the figures in Benson *et al.* (1964), which are for Rhodesia only (*op. cit.*: 32), where records are sufficient for this purpose, some clutch sizes are in agreement, i.e. in the Columbidae, Caprimulgidae, *Batis molitor*, *Cisticola cantans*, *Prinia subflava*, *Tchagra australis*, *Chlorophoneus sulfureopectus* and Nectariniidae. Others differ in that the Park's birds have smaller clutch sizes, usually by one egg, i.e. in *Colius striatus*, *Anthus similis*, *Macronyx* spp., *Pycnonotis barbatus*, *Tchitrea viridis*, *Saxicola torquata*, *Lanius collaris*, and *Laniarius aethiopicus*.

	Number of Records			
	C/1	C/2	C/3	C/4
Columba arquatrix	3			
Streptopelia semitorquata	7	17		
Caprimulgus fraenatus *	1	7		
Caprimulgus poliocephalus		5		
Caprimulgus fossii		1		
Colius striatus	4	28	16	3
Anthus similis		2	9	
Macronyx aurantiigula		2	2	
Pycnonotus barbatus	10	101	5	
Dioptrornis fischeri		6	1	
Batis molitor		4		
Tchitrea viridis		6		
Saxicola torquata		5	7	1
Melocichla mentalis	1	4		
Apalis flavida	2	11	2	
Sylvietta whytii		5		
Cisticola woosnami			2	
Cisticola cantans	2	2	6	
Prinia subflava	2	1	4	2
Ptyonoprogne fuligula	1		5	
Lanius collaris		2	3	2
Laniarius aethiopicus		4		
Tchagra australis	3	5	3	
Chlorophoneus sulfureopectus		2		
Nectarinia kilimensis	3			
Cinnyris venustus	3	24	3	
Anthreptes collaris	3	3		
Cardeuelis citrinelloides		2	2	1
Serinus striolatus		9	2	

* — This name follows White (1965)

SUMMARY

The Arusha National Park lies within a regime of two rainy seasons, the short rains occurring in November and December, and the long rains from mid-March to early June. The result is two main flushes of plant growth and insect-life. The dry seasons are short, cloud cover being prolonged during the longest of them, and the effect of drought on the vegetation is minimal.

These conditions enable some breeding to take place throughout the year, and make records difficult to interpret. The breeding records are divided into seven categories and are listed in tables as follows:—

1. Water and swamp birds show much diversity but have a maximum of breeding activity during and after the long rains.
2. Raptors divide into two groups, one nesting early, during the long rains, the other later, in the ensuing dry season. *Buteo rufofuscus*, the most numerous, nests throughout both periods.
3. Grass birds show some diversity, but some species (i.e. Cisticolas and Ploceidae) appear to start with the short rains, continuing with little break to the end of the long rains. However, some Ploceidae can breed at any time of the year.
4. Ground birds usually nest during the two dry periods, but most species have only one breeding season.
5. Forest birds generally have one season, from September to December, before and during the short rains.
6. In insect and fruit-eating birds of woodland and secondary bush, two breeding seasons show up well, one before and during the first part of the short rains, and the second in the hot, short, dry season and beginning of the long rains, 60% of the species having two seasons.

7. Miscellaneous groups show a considerable diversity, but nesting generally avoids the cold month of August and, surprisingly, the more congenial month of September.

An appendix of clutch sizes is included, and some comparisons made with Rhodesian data.

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On the supposed genus *Petrochelidon*

by Allan R. Phillips

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Brooke (1972: 55–56) maintains *Petrochelidon* apart from *Hirundo* because it "has a red rump and a virtually square tail and does not build an entrance tunnel to its mud pellet nests: some species are colonial breeders". (He also removes from *Hirundo* certain other species, placing them in *Pseudhirundo* and *Cecropis*, with which I am not here concerned, for lack of field experience.)

The nests of the common swallows are well known, and publicized in a multitude of short articles and local and general works, besides the classic Bent "Life Histories" (Bent 1942). Contrary to Brooke's claim, the type species of "*Petrochelidon*", "*P. pyrrhonota*" or *albifrons*, the Cliff Swallow, *does* quite uniformly build an entrance tunnel to its retort-shaped nests. The Cave Swallow, "*P.*" *fulva*, usually does not, but its nesting is quite variable; see for example Wetmore and Swales, 1931: 320–322.

Tail shape is quite variable among species generally conceded, even by Brooke, to belong to *Hirundo, sensu strictu*. I cannot regard rump colour as a good generic character; and since none of Brooke's other characters hold true, I continue to regard "*Petrochelidon*" as inseparable from *Hirundo*, as previously (Phillips, Marshall, and Monson, 1964).

Of more importance, perhaps, is the nasal operculum (*cf.* Ridgway, 1904; Brodkorb, 1968); but its variation (presence or absence) cuts right across the colour and nesting variations, which may prove more basic.

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Nesting of the Roseate Tern *(Sterna dougallii)* near Dar es Salaam

by D. Keith Thomas & Hugh F. I. Elliott

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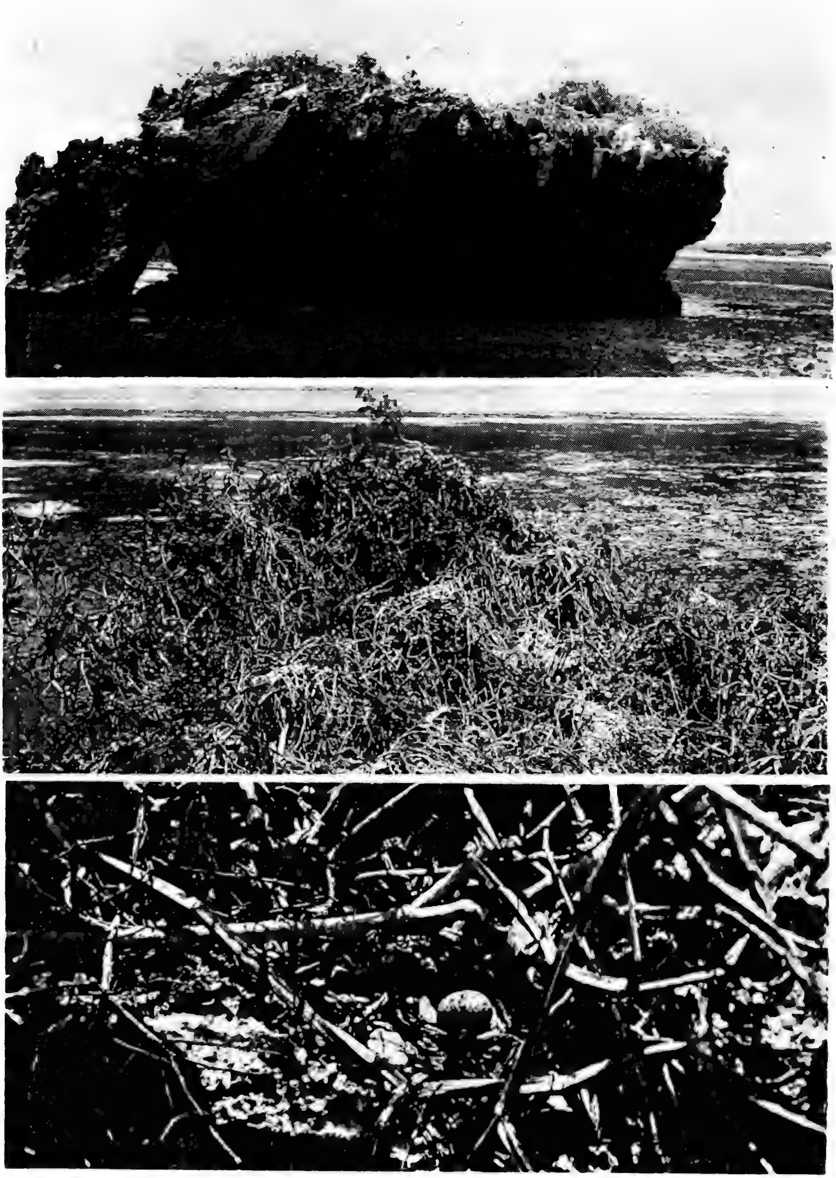
The current interest in seabirds of the East African coast has prompted us to dig out some long unpublished notes and photographs of a Roseate Tern colony which established itself near Dar es Salaam from July to September 1960. This was recorded soon afterwards by one of us (Thomas 1962), but with few details. Otherwise, there seem to be no records of the breeding of this species in what is now Tanzania, except for those quoted by Mackworth-Praed & Grant (1952), namely Zanzibar (in October: a breeding male and a chick marked "Chumbe Zanzibar 3/10/27" are in the British Museum (Natural History) collection); coral reef near Pemba (June and July); Kisite islands near Tanga (July); and, "almost certainly", Mafia (Aug. and Spet.).

The Dar es Salaam colony was discovered by D. K. Thomas on 7th August 1960, on an undercut ("mushroom") coral islet of about 50 m in circumference and 4.5 m in height, one of several strung out along an extensive reef which more or less dries out at low spring tides. This reef, the Hammand, lies to the north of Outer Makatumbe ("Lighthouse") island, some 4 km from the harbour entrance. The number of adult terns was estimated at about 300 and this was confirmed when we both visited the site on 21st August. On that occasion six to ten pairs of terns were also found to be nesting on a smaller islet about 100 m away. Some eggs had already been hatched on 7th August, suggesting that the colony had been occupied by mid-July. However, some eggs were also still being incubated on 21st August and, on our final visit on 3rd September, when only 20–30 adults remained in the vicinity, a few unfledged chicks were being fed.

The flat-looking but in fact very rough and deeply creviced tops of the islets, both of which were accessible only at fortnightly intervals (in the case of the main colony thanks to the collapse of a large segment of the overhang), were covered by a dense tangle of vegetation, identified (L. H. Brown *in litt.*) as mainly composed of *Salvadora persica* and *Cissus quadrangularis*, although one baobab had managed to obtain a ledgement. The eggs had been laid on the bare coral or, occasionally, on a sparse mat of plant detritus, which looked as if it had been brought together as nest material. There was particularly good cover for young birds on the dense vegetation and crevices. In most cases only a single egg had been laid, but three C/2 were noted. Seven eggs measured averaged 43.5×31.5 mm (extremes 46.5×30.5, 40.5×31 and 45×32); egg colour was very variable, from pale bluish white almost unmarked through stone-grey with fine black and ashy speckling to deep buffy with large blotches of dark brown and lavender-grey. There was a frequent tendency for the markings to form a central band.

Observations of this colony and examination of the two specimens collected, an adult and chick, now in the British Museum, support the conclusion that tropical populations of Roseates tend to be smaller, whiter below (with no discernible pink flesh) and redder-billed when in breeding condition and, in juveniles, with the pale grey of mantle and scapulars more heavily overlaid with buffy mottling, compared with populations of the sub-tropics or temperate regions whether to north or south. Our birds' bills looked red with a black tip rather than black with red at the gape, although in the adult specimen collected only 20.5 of the 39 mm of the upper mandible was in fact

red, or just over half, This specimen most closely matches those from Ceylon in the British Museum collections, which are attributed to the subspecies *korustes* originally described from the Andamans. But specific nomenclature



Roseate Tern colony on one of two coral islets on Hammand reef, Dar es Salaam. Top: the islet at low spring tide: broken segment on left allowed access to colony—about 50 terns visible in photograph; part of Outer Makatumbe island in right background. Middle: the mat of *Cissus quadrangularis* and *Salvadora persica* on the summit—looking west over outer anchorage of Dar es Salaam towards city. Bottom: egg on coral rag in the *Salvadora/Cissus* tangle, a few leaves and twigs having apparently been assembled as nest material.

is an unsatisfactory way of recording the intergradations of this wide-ranging species, especially as all the characters that have been used except size (where the variation is only of the order of five or six per cent) are invalid unless the birds compared are known to have been at the same stage in the breeding cycle.

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The Relationships of *Picathartes*

by Charles G. Sibley

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The systematic position of the West African genus *Picathartes* has been examined by several authors in recent years. Sclater (1930) and others before him had placed *Picathartes* in the Corvidae but Lowe (1938) proposed that it is a member of the Sturnidae. Amadon (1943) suggested that *Picathartes* may be an "aberrant member of the thrush-babbler assemblage" and Delacour (1950) placed it in a special tribe, Picathartini, in the Timaliinae. Delacour & Amadon (1951) reviewed the problem and the evidence and concluded "that *Picathartes* has far more in common with babblers than with starlings, crows, or other passerine families". Serle (1952) reviewed the nestling behaviour, eggs and juvenile plumage of *Picathartes* and found nothing inconsistent with a relationship to the Corvidae. He noted that the babbler *Eupetes* of south-east Asia, Indonesia and Borneo resembles *Picathartes* in general proportions, texture of the plumage and bare skin areas. Although Serle advocated comparisons with all passerine groups he thought that *Picathartes* should be kept "in or near the Corvidae". Bannerman (1951; 1953) circumvented the problem by placing *Picathartes* in its own monotypic family but indicated his acceptance of Lowe's position by placing it next to the Sturnidae. White (1962) retained *Picathartes* in the Corvidae "largely because no convincing reasons for moving it have yet been given" (p. 4). Deignan (1964: 442) recognized a subfamily. Picathartinae, near the Timaliinae in the Muscicapidae. Hall & Moreau (1962) included *Picathartes* in the Timaliidae, Moreau (1966: 161) referred to "the babblers *Picathartes gymnocephalus/oreas*" and Hall & Moreau (1970: 149) "tentatively" followed the arrangement presented by Deignan (*loc. cit.*).

In a recent study (Sibley 1970) the egg-white proteins of *Picathartes gymnocephalus* were compared with those of many other passerine groups using the technique of starch gel electrophoresis. I found (p. 62) that the patterns produced by *Picathartes* egg white were more like those of the timaliids than those of corvids or sturnids, and thus supported the conclusions of Delacour & Amadon (1951). But this evidence fell short of providing proof of such a relationship because of the limitations of the starch gel technique. I am now able to report on additional studies of the egg-white proteins of *Picathartes* using the electrophoretic method of isoelectric focusing in acrylamide gel (IFAG). This techinque is described in Sibley & Frelin (1972). With IFAG many more proteins can be resolved and the resulting patterns provide an improved basis for systematic comparisons. I have discussed the use of electrophoretic data in systematics in previous papers (e.g. Sibley 1970).

Two sets of comparisons, using *p*H ranges of 3–10 and 6–4, were carried out. That *Picathartes* is a babbler, rather than a sturnid or a corvid, is easily established but it is even clear that *Picathartes* is especially close to the African timaliine genus *Turdoides*. Some 21 protein bands can be seen in the *p*H 3–10 gels and all of them are identical or nearly so between *Picathartes gymnocephalus* and *Turdoides jardineii* and *T. leucopygius*. The other babblers, for which egg-white specimens were available, namely, *Trichastoma sepiarium*, *T. bicolor*, *Pomatostomus temporalis* and *P. superciliosus*, basically agree with *Picathartes* and *Turdoides*, but show some minor differences in the positions or concentrations of some proteins.

In the "magnified" patterns of the *p*H 6–4 region the detailed similarities between *Picathartes* and *Turdoides* are striking. Ten proteins can be resolved in this limited range and for six of them *Picathartes* and *Turdoides* have identical isoelectric points. The other four show small differences in isoelectric points of a magnitude I have often observed between congeneric species. In fact, the two species of *Turdoides* are only slightly more alike than *Picathartes* and either of the *Turdoides* The most striking contrast is found in the comparisons between *Picathartes* and the Malayan *Trichastoma* and the Australian *Pomatostomus*. Both show greater differences when compared to *Picathartes* than those noted between *Picathartes* and the African *Turdoides*.

It thus seems clear that *Picathartes* is a babbler and that its closest living relatives are probably the members of the genus *Turdoides*. It will be necessary to compare the egg-white proteins of *Picathartes* with those of all genera of African babblers before we can be absolutely certain that *Turdoides* is closest to it. However, of the babblers occurring in Africa *Turdoides* seems to be the most likely close relative of *Picathartes*. The resemblances between *Picathartes* and *Eupetes* noted by Serle (1952) are almost certainly the result of convergence but should be investigated further. The egg white of *Eupetes* is not available but it, and that of all species, would be welcomed by the writer.

In view of this new evidence I recommend that *Picathartes* be placed next to *Turdoides* and that they be arranged no farther apart than as tribes in the same subfamily. In my opinion they are closely related genera and the only reason for separating them in different tribes is to recognize their superficial morphological differences.

ACKNOWLEDGEMENTS

The first egg white of *Picathartes* which I received came to me through the kindness of Mr. J. T. Menzies, at that time resident in Sierra Leone. The specimen used in this study was collected in Ghana by Dr. L. G. Grimes to whom I am also grateful for a memorable trip to see *Picathartes gymnocephalus* in the field during a visit to Ghana in 1964. The other egg white specimens mentioned were provided through the kindness of Dr. David R. Wells, Mr. Tony E. Bush and Mr. Gordon B. Ragless. Mr. Jon E. Ahlquist gave generously of his help and advice and technical assistance was provided by Miss Dorothy J. Moore. The National Science Foundation supported the study under grant GB-6192X.

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Blood parasites from a Red-chested Owlet *Glaucidium tephronotum*

by John E. Cooper

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The Red-chested Owlet *Glaucidium tephronotum* Sharpe is a little known forest species ranging from Ghana east to Kakamega forest, Western Kenya (White 1965; Ripley & Bond 1971). There is a paucity of data on the biology of the species (Brown 1970) and I have been unable to trace any references to its diseases or parasites. In this note I report the finding of three species of blood parasite in a captive specimen of the Zaire and Uganda race, *G. t. medje* Chapin.

Full details of the bird's history have been impossible to obtain. Dr. C. Pennycuick received it in late 1969 from Dr. M. P. C. Fogden, from Western Uganda; Pennycuick used the bird in his wind-tunnel experiments in Nairobi for some time until it was noted, on 5th July 1970, to be depressed in appearance; no treatment was given and it was found dead the next day.

A full *post-mortem* examination was carried out at the Veterinary Research Laboratory, Kabete, Kenya on the day of death. The bird was an adult male, thin (weight 67 g) with some damage and soiling of feathers but carried no ectoparasites. The skin is now in the National Museum, Nairobi. There was no internal fat and the liver was congested. The gizzard contained only chitinous arthropod remains. Two small nematodes were found on the abdominal air sac walls and these were later identified by the British Museum (Natural History) as a *Demsidocercella* species. No parasites were found in the intestinal tract but a faceal sample showed three *Capillaria* eggs, several unidentified spiruroid or filaroid eggs and a few coccidial oocysts. Culture of intestine yielded *Escherichia coli*, but heart blood was bacteriologically sterile.

Routine blood smears from the heart of the bird were fixed with methyl alcohol and stained with Giemsa's stain. Examination revealed three blood parasites—the Protozoa *Haemoproteus* and *Leucocytozoon* (parasitizing the red

and white blood cells respectively) and numerous microfilariae (Nematoda) within the plasma. It was not possible to identify these parasites further from a blood smear. There were no haematological abnormalities and no evidence of anaemia. Both blood Protozoa and microfilariae have been recorded previously from owls but as Keymer (1972) and Cooper (1972) point out, there is little data on their pathogenicity. In the present case there was no evidence to suggest that they were associated with disease and the cause of death remains obscure. In addition to the Red-chested Owlet above I have examined blood from 12 owls in Kenya (eight *Tyto alba*, one *Ciccaba woodfordii*, one *Asio capensis*, one *Bubo africanus* and one *Bubo lacteus*) but in none of these have I found either Protozoa or microfilariae. It is, of course, possible that the parasites in the Red-chested Owlet were acquired in captivity but all three parasites are vector (arthropod) borne and it would seem more likely for the bird to become infected in its natural habitat in the forest than in captivity in the laboratory. Whatever the source however, the presence of three blood parasites in the blood of one specimen of *Glaucidium tephronotum medje* would appear to warrant record.

I am grateful to Dr. C. Pennycuick for data on the owlet and for permission to record these findings, to Dr. I. F. Keymer for confirming the identification of the blood parasites and to Mr. G. C. Backhurst for valuable comments and advice on this paper.

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Notes on the birds of Rangiroa, Tuamotu Archipelago, and the surrounding ocean

by D. T. Holyoak

Received 20th November 1972

While travelling between Tahiti and the Marquesas Islands in 1972 I twice passed through the northern end of the Tuamotu Archipelago, and spent two days on Rangiroa atoll. Very little information is available on seabirds at sea in this region and the land-birds are little known, so it seems worthwhile recording the limited observations I was able to make.

On 13th August I was on the French Navy frigate "L'Enseigne de Vaisseau Re Henri" about 30 miles east of Makatea at dawn. I was able to make almost continuous observations as the ship passed between Rangiroa and Arutua, then between Ahe and Manihi, reaching a position just north of Manihi by dusk. In September I returned from the Marquesas Islands on the American yacht "Sea Star", reaching a point about mid-way between the Marquesas and Tuamotu Islands by dawn on 3rd September (12° 19′ S, 143° 57′ W.), spending the next two days sailing to Rangiroa, than 6th–7th September on the north side of Rangiroa atoll.

Rangiroa is one of the largest atolls in the world, being about 45 miles from east to west and 20 miles from north to south. It consists of a ring of coral and coral sand, mainly between 100–300 m wide, reaching a width of

600 m in a few places, and broken by a few small sea gaps. The shallow lagoon enclosed is so wide that the other side of the atoll cannot be seen in many places. The land rises to a maximum of about 5 m above sea-level and supports a meagre vegetation dominated by *Scaevola* bushes and coconut palms. Near the small villages there are numerous introduced trees and bushes. The population is about 800, nearly all of them Polynesians who live by fishing, copra production and subsistence farming.

The northern Tuamotus are within the latitudes of the Southeast trade winds, which blow with little variation in strength and direction. The ocean falls away to great depths close to the islands, and is affected by the easterly South Equatorial Current, which moves up to about five miles a day near Rangiroa. Water disturbances as this current reaches the steep shores of the archipelago probably account for the rich marine life that supports the large seabird populations.

Pterodroma rostrata, Tahiti Petrel: Birds identified as this species were seen at 12° 20′ S, 144° 00′ W (one, 3rd September), 12° 30′ S, 144° 35′ W (one, 4th September) and 12° 50′ S, 145° 23′ W (five, 5th September). At least 20 other gadfly petrels seen were either this species or the similar *P. alba*. The seven listed above were all distinguished from that species at close range by their larger size, heavier bill, heavier less buoyant flight and the absence of a small light patch under the chin. Under the variable light conditions at sea I found it difficult to detect the differences in colour of the upperparts of these two species. These are the first records for *rostrata* in Tuamotus waters, although it breeds in both the Society and Marquesas Islands (King 1967).

Pterodroma alba, Phoenix Petrel: One seen at 12° 46′ S, 145° 19′ W on 4th September was the only one positively identified, although some of the unidentified gadfly petrels mentioned under *rostrata* were probably this species; it breeds in the Tuamotus.

Pterodroma arminjoniana heraldica, Herald Petrel: Only one seen, at 12° 19′ S, 143° 57′ W, on 3rd September; breeds in the Tuamotus.

Pterodroma neglecta, Kermadec Petrel: Two seen on 5th September (13° 43′ S, 147° 10′ W and 13° 50′ S, 147° 17′ W) were distinguished from the rather similar white phase of *P. arminjoniana heraldica* by the dull brown underwings with an oval white patch restricted to the area around the base of the primaries (not a longer, diffuse, light stripe), slightly larger size, and the way in which they remained lower over the water when banking. The only other records of this species in the Tuamotus are three specimens collected by the Whitney Expedition that are now in the American Museum of Natural History.

Pterodroma leucoptera, White-winged Petrel: Two seen together on 3rd September at about 12° 20′ S, 145° 21′ W, are the first records for the Tuamotus area. They were seen down to a range of about 15 m and were noted at the time as, "small gadfly petrels, grey above with dark 'W' back back pattern, blackish patch on crown extending to lower nape, all-white underparts, small bill, underwings virtually all-white with no trace of a dark line extending inwards from the alula, flight quick with rapid wing-beats".

About ten small and medium-sized gadfly petrels were not seen well enough for species identification.

Puffinus pacifus, Wedge-tailed Shearwater: About ten were seen at intervals on 13th August; one seen about ten miles from the north coast of Rangiroa on 9th September, and about ten birds that were probably of this species seen at 13° 43′ S, 147° 10′ W, at dawn on 5th September. All were of the dark colour morph. Breeds in the Tuamotus.

Puffinus nativitatis, Christmas Shearwater: One seen at about 12° 46′ S, 145° 19′ W, on 4th September; breeds in the Tuamotus.

Nesofregetta albigularis, White-throated Storm Petrel: One seen 13th August about 50 miles W.N.W. of Makatea, and another on 5th September at about 13° 02′ S, 146° 20′ W. Both were light phase birds, and they appear to be the only records for the Tuamotus other than old ones of "dark storm petrels" quoted by King (1967), which could have been other species of Hydrobatidae or *Bulweria*. Identification was certain as the white throat patch bordered below with black, white belly and butterfly-like flight were noted with both birds.

Phaethon aethereus, Red-billed Tropicbird: An adult seen at about 13° 45′ S, 147° 11′ W, on 5th September. This is the first record for the Tuamotus area. Identification was certain as the bird repeatedly flew around the mast of the yacht, giving clear views of a scarlet bill, long white central tail feathers and narrow black bars on the back.

An unidentified immature tropicbird was seen about 40 miles north of Rangiroa on 5th September; both *P. lepturus* and *P. rubricauda* breed in the Tuamotus (King).

Sula sula, Red-footed Booby: A total of several hundred was seen close to the islands, singly and in small groups. None were seen more than about 30 miles from land except for a single bird at about 12° 28′ S, 144° 15′ W on 3rd September. Three out of 231 birds counted were of the light phase; breeds in the Tuamotus.

Sula leucogaster, Brown Booby: Single birds were seen frequently close to the islands, a total of about 20 being counted; none were seen more than 30 miles from land. Breeds in the Tuamotus.

Fregata minor, Great Frigatebird: The only bird definitely identified as this species was an adult male seen on 6th September about two miles north of Rangiroa. Breeds in the Tuamotus.

Fregata ariel, Lesser Frigatebird: Apparently commoner than *minor*; 11 were identified on or near Rangiroa and one near Ahe, most of them soaring over the atolls. A further 20 or so unidentified and immature frigatebirds were seen near to the islands, and single unidentified immatures were also seen far from land on 2nd September (around 12° 22′ S, 144° 05′ W) and 3rd September (12° 25′ S, 144° 35′ W). Breeds in the Tuamotus.

Egretta sacra, Reef Heron: Common on Rangiroa. They fed mainly on fish in the clear, shallow water along the shore, but also in a small grassy marsh and on bare areas of the atoll among scattered bushes where insects appeared to be the main prey. I will comment elsewhere on counts of the two colour morphs made on Rangiroa and other islands in the Tuamotus (Holyoak *ms* a).

Gallus gallus, Domestic Fowl: Numerous around houses on Rangiroa, but no feral populations exist.

Pluvialis dominica, Lesser Golden Plover: Common along the seaward shore of Rangiroa and on grassy areas of the atoll, about 30 being seen altogether. Most birds were moulting from summer to winter plumage in early September, but the stage of moult varied considerably between individuals.

Prosobonia (*Aechmorhynchus*) *cancellatus*, Tuamotu Sandpiper: One was seen on a bare area of Rangiroa about three miles south-east of the airstrip, on 6th September. It was alone, and feeding on insects taken from the ground in a bare area of coral among scattered herbaceous plants. For the five minutes I was able to watch it was absurdly tame, allowing me to approach to within about 2 m before running further away; throughout this time it gave a soft "pew" "pew" squeaking call almost continually. After I had followed it for

about 40 m it suddenly flew (disclosing heavy moult of the primaries and secondaries) and continued low over the beach until lost to view.

This species is endemic to the Tuamotu Archipelago, where it breeds only on small atolls having no men, cats or rats (*mss* by Quayle & Beck in American Museum of Natural History). As atolls like this are gradually becoming scarcer its continued survival is in doubt unless some small atolls are set aside as reserves. Presumably the bird I saw was merely a casual visitor to Rangiroa as it has not been recorded there before and this island is unsuitable for breeding owing to the abundance of men and rats.

Tringa incana, Wandering Tattler: Numerous along the seaward shore of Rangiroa, about 20 being seen in total. Most of them were still in summer plumage.

Sterna (Thalasseus) bergi, Crested Tern: About ten seen close to the shores of Rangiroa on 6th–7th September. These were adults accompanied by one or two flying juveniles each. An adult was seen to fly towards a juvenile that was following and giving squeaking calls, then to pass a small fish to its bill about 20 m up above open water. Another juvenile was watched standing on a beach attempting to swallow a reef fish about 8 cm long, 5 cm deep and 1 cm thick; eventually it gave up and left the fish on the beach.

Sterna fuscata, Sooty Tern: Numerous around the islands, hundreds being seen around Rangiroa on 6th–7th September. Both days on Rangiroa flocks of up to 60 birds were frequently seen flying high along the atoll to the south-east, calling frequently. Only three in juvenile plumage were seen despite careful inspection of "noddies". Up to five daily were also seen far from land on 13th August and 3rd–4th September; breeds in the Tuamotus.

Sterna lunata, Grey-backed Tern: Two seen at about 12° 46′ S, 145° 19′ W on 4th September, and six near the shore of Rangiroa on 6th September; breeds in the Tuamotus.

Procelsterna cerulea, Blue-grey Noddy: At least 50 seen close to shore of Rangiroa on 6th–7th September; none seen away from land. Appeared to be breeding in coral blocks along shore of Rangiroa, as sereval birds flew out from beneath them as I passed and it is known to breed elsewhere in the Tuamotus (King).

Anous stolidus, Brown Noddy: Large numbers seen whenever I was within 20 miles of land, feeding flocks seen off Rangiroa containing up to about a thousand birds of this species. Apparently less numerous than *A. tenuirostris*. Breeds commonly in coconut palms on Rangiroa and elsewhere in the Tuamotus. I saw several well-grown young birds in coconut palms and adults were seen to fly from them. Few seen far from land, my only records being of five at about 13° 43′ S, 147° 10′ W on 5th September and five more at about 13° 52′ S, 147° 50′ W the same day.

Anous tenuirostris, Black Noddy: Large numbers seen whenever I was within about 20 miles of land, but none further out. Several feeding flocks seen near Rangiroa had several thousand birds of this species, and flocks of scores or hundreds were always in view from the shore. Nests abundantly in coconut palms on Rangiroa, where I saw numerous nestlings at all stages of growth.

One was watched flying back and forth alone over lagoon water only 5–8 cm deep, periodically dipping in to water to catch a tiny fish in its bill and touching the bottom with its feet, then resting there briefly with opened wings half-raised before flying up and starting to hunt again. A Reef Heron feeding in the water lunged at this bird several times when it passed close by.

Gygis alba, White Tern: Common near to land, many hundreds being seen feeding close to Rangiroa, where they were breeding in coconut palms and other trees (two small young seen). Far from land small numbers were seen daily, maximum 16 on 2nd September.

This species is conspicuous in the large feeding flocks of terns characteristic of the Tuamotus as it flies to and fro about 10–25 m above the water, periodically dipping to catch small fish. *Anous stolidus* and *A. tenuirostris* characteristically fly beneath the White Terns, usually only 1–5 m above the water. All three species feed throughout the day in large numbers; the White Tern also feeds at night, but I obtained no proof that the *Anous* species do so too.

In the bright sunlight usual in this area the white flashes as *Gygis* turns to dip to the water surface are conspicuous at a great distance, and are used by local fishermen to locate fish shoals. Presumably the white colouration also enables other *Gygis* and other species of fish eating-bird to spot fish shoals easily. When solitary birds or small flocks of this species first start to feed they give a long, high-pitched "weeee" squeaking call almost continually. This must make them conspicuous to birds that have not found food from several miles away, as from the near-silence of a yacht under sail I often heard them before seeing them at ranges of at least 1 km; I did not notice this call when travelling on motor powered ships and boats, probably because of the engine noise. Perhaps the call aids in the co-ordination of nocturnal feeding, as I frequently heard it at sea during the night.

In view of the number of White Terns I saw far from land between the Marquesas and Tuamotu Groups it seems likely that the endemic Marquesan subspecies *microrhyncha* occurs in Tuamotu waters, although records are lacking.

Ptilinopus (*purpuratus*) *coralensis*, Tuamotu Fruit Dove: Seven or eight seen in tall scrub and low trees in a coconut plantation in the village on the north side of Rangiroa. I did not see any in the scrub and coconut plantations away from the village where there were few trees other than coconuts. They were comparatively tame, often not flying away until I walked in full view of the bird to within about 4 m. It moves freely from about 12 m up in the tree-tops to the ground, feeding on the ground and in very low bushes as well as in taller bushes and trees. Its movements through foliage are agile, with long hops between branches, rapid sideways runs down them and hanging head downwards to reach food. The general shape and outline of this form are distinctly slimmer and more passerine-like than those of the related *ptilinopus* in the Society Islands. Its flight is direct, but not very rapid, with quick, regular, rather shallow wing-beats that make a whistling sound.

I saw them eat black berries about 7 mm in diameter from a low bush, small green flowers of a low tree, and many insects pecked from the foliage of bushes and the ground with a quick darting action. Bruner (1972 p. 75) also records them eating insects on the ground, and grass seed.

The usual song is similar to that of Society Island *Ptilinopus, a soft* "oooo-oooo-oooo-ooo-ooo-oo-oo-o-o-o-o-o" accelerating towards the end as it dies away. An alternative song similar to those heard in the Society Islands was also heard several times and tape-recorded, "ooa-oo oooa-oo oooa-oo oooa-oo". They frequently sang from low in bushes as well as high perches.

After singing one bird was seen to fly down in to a low bush and perch near to another about 3 m up. It then walked towards the other bird, allo-preened its crown and nape for about a minute (without huddling close to the

bird being preened), stepped back and preened itself. Head-scratching in this species is direct (foot lifted straight to head).

A local woman showed me a nearly fully-built nest less than a metre above the ground in a patch of thick, low scrub among taller bushes in a coconut plantation. The nest was well-hidden from above, and consisted of a flimsy, flat platform of thin twigs and slender pieces of vine stem. Local people all agreed that it lays a single pale brown egg in a flimsy, flat nest. The eggs of all *Ptilinopus* so far known are white, except that *superbus* lays white or creamy white eggs (Goodwin 1967); thus my informants may have been wrong about the egg colour. I was told that it also nests higher up in bushes but that nests within about 15 cm of the ground are common.

Goodwin (*l. c.*) and others have lumped this form with *Ptilinopus purpuratus* of the Society Islands, along with *chalcurus* from Makatea and *chrysogaster* from the Leeward Society Islands. It is always difficult to decide what taxonomic status should be afforded island forms that replace each other geographically, and any treatment is little better than an informed guess. Generally the best basis from which to guess would seem to be the extent of differences in closely related forms that achieve sympatry. In *Ptilinopus* the sympatric species *mercierii* and *dupetithouarsi* of the Marquesas Islands do not differ more in plumage than some of the forms included in *purpuratus*, and they appear to differ less in behaviour and ecology than do *purpuratus* and *coralensis*, (Holyoak in prep. and *ms* b).

P. purpuratus purpuratus and *P. p. chrysogaster* of the Society Islands have very similar general behaviour and ecology (Holyoak *ms* b), and differ from *coralensis* in being almost entirely arboreal, eating fewer insects, nesting higher in trees and in general body shape. It seems unlikely that either would survive for very long in the habitat of the other. *P. p. chalcurus* is intermediate in plumage between *coralensis* and nominate *purpuratus*, but differs from both in its darker mauve cap. The biology of *chalcurus* is practically unknown, but the raised atoll of Makatea probably offers conditions that are intermediate in many respects between those of the mountainous Society Islands and the low atolls of the Tuamotus. As Makatea is also between the Society Islands and Tuamotus geographically, it seems likely that *chalcurus* does represent a link between *coralensis* and the nominate form. Thus it may be best to keep all of those forms together in one species despite the marked differences in their general ecology; however, any course of action is largely arbitrary.

Acrocephalus atypha, Tuamotu Warbler: Three birds were seen in an area of tall bushes under scattered coconut palms near the airstrip on Rangiroa. They were very tame, approaching through open branches to within 2 m of me in a very bold manner. In general their actions when moving through vegetation were similar to those of *Acrocephalus arundinaceus*, although their flight appeared weaker.

They pecked small insects from twigs and leaves as they hopped rapidly up and down branches, and one was seen to catch a small insect in flight. Calls were similar to those of *A. caffra* of the Society and Marquesas Islands, a low "chru" being frequently repeated. The song was also similar in structure to that of *caffra*, but less continuous, less rich and less varied. Typically the song consisted of the "chru" call followed by a short whistling phrase, *e.g.* "chru-peee-tu-tu-pee-wee" followed by a pause before the song was repeated with a different arrangement of whistling notes. They sing at all levels from high in coconut trees to low down in bushes, and appeared to sing most vigorously around sunset.

Singing birds replied vigorously and approached me with raised crown feathers and half-opened wings when I played tape recordings of their song to them. The whistling songs of a variety of unrelated American birds, including wrens, thrushes and a parulid, evoked equally vigorous responses. Presumably as *A. atypha* is the only songbird in the Tuamotus it has lost the ability to differentiate between songs of conspecifics and other species that related birds of continental areas have. It is also likely that the present varied and musical song has not degenerated, solely because there is a need for it in intraspecific relations.

I saw several old nests built in bushes from 4–8 m above the ground, usually among trailing vines. One I examined was a substantial, deep, cup-shaped structure built of grass stems, long leaves and the fine stems of vines, with a lining of slender vine stems. It measured about 12 cm from top to bottom and was built in a fork of the branch of a bush among a thick vine growth.

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Mr. E. Bryan jr., Mlle. K. Dubois, Dr. C. Jouanin, Dr. B. Salvat, Dr. D. W. Snow and M. C. Tissier also assisted me in various ways, and I am grateful to Dr. W. R. P. Bourne and Mr. W. B. King for commenting on my manuscript.

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First Report of Pitta e. erythrogaster from Leyte

by Kenneth W. Prescott

Received 24th November 1972

Some time ago Dr. Kenneth C. Parkes questioned me concerning a pitta which I had collected on 4th July 1945. Although the recorded locality of the specimen was Leyte, which attracted Parkes' attention, it was taken aboard a ship which was anchored a few miles off the coast of central Leyte in the Leyte Gulf. McGregor & Worcester (1906: 68) listed twenty-three Philippine Islands from which *P. e. erythrogaster* has been recorded. Leyte was not one of these although it was recorded from the neighbouring islands of Samar to the north, Mindanao to the south, Cebu and Panay to the west and south-west, and Masbate to the north-west. In discussing the zoologically distinct island groups of the Phillippines, McGregor & Worcester (1906: 4–5) grouped Samar, Leyte and Bohol together, placed Cebu in a class by itself, regarded Mindanao and the immediately adjacent islands as by themselves, and Panay and Masbate were placed with the central Philippine group.

Although in 1906 McGregor & Worcester did not record this pitta from Leyte or Bohol, subsequently McGregor (1909: 414) listed it from Bohol but not from Leyte. To date, strangely enough, it has not been reported from Leyte. A glance at the map discloses the fairly large Leyte literally encircled by islands on which *P. e. erythrogaster* is found; moreover, the zoologically related Samar is contiguous with Leyte to the north-east. My specimen, although collected offshore, rather strongly suggests that *P. e. erythrogaster* exists on Leyte.

At dusk the bird flew aboard the well lighted U.S.S. Jamestown, A.G.P.-3, through an open porthole alighting on a table in a crew's mess where it was quickly pounced upon by a boatswains-mate whom I had frequently taken on collecting trips. He brought the still living bird to me which I subsequently made into a skin, now UMMZ–113, 932 (sex, female?) in the University of Michigan, Museum of Zoology collection. The Jamestown was one of several hundred lighted ships anchored that evening in Leyte Gulf. That the pitta chanced my way was a stroke of good luck, although we were anchored much closer to shore, two–four miles, than the other larger war ships.

For this specimen I am grateful to the quick thinking George, BM/1c, and to the U.S. Navy which allowed me to collect birds while serving (then Executive Officer of the Jamestown) during a time of war. I am indebted to Dr. Parkes who called my attention to the importance of the locality in which the pitta was collected.

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Supplementary Notes on the Birds of Point Tombo, Argentina

by Jeffery Boswall

Received 5th December 1972

In company with Donaldo MacIver and Douglas Fisher I returned to Point Tombo, Argentina, from 10th–26th October 1972 to complete a BBC television film on the biology of the Magellanic Penguin *Spheniscus magellanicus*. The visit was earlier in the season than that in 1971, the ornithological results of which were published by Boswall and Prytherch (1972). A few supplementary notes are now set out with emphasis on the seabird species known to nest. Not all bird species seen are mentioned.

The notice prohibiting access to Point Tombo in the interests of preserving the ecology of the area proved to be meaningless. Between 2,500 and 3,000 people visited the area in the austral spring and summer of 1971–2, mainly in December, January and February, and mainly at weekends, They wander at will and in our experience are particularly attracted to the part of the penguin colony without bushes, where the birds are most conspicuous and where the burrows cave in very readily. Also, we saw that Kelp Gulls *Larus dominicanus* follow in the wake of humans and carry off penguin eggs left unguarded. The uncontrolled wanderings of tourists is a cause of great concern to local conservationists.

Eudyptes crestatus, Rockhopper Penguin; Four dead birds on the shore.

Spheniscus magellanicus, Magellanic Penguin: Specially detailed notes were kept on this bird to be used as a basis for the film commentary. Also a separate paper is being prepared. However it is important to tidy up here some points made in the earlier Point Tombo paper. The phrase "peak of laying" in paragraph two under *S. magellanicus* should read "peak of clutch completion". Point Tombo is now known *not* to be "the northernmost colony of this species on the Atlantic coast apart from 50 pairs reputed to nest at Punta Leon . . . (64° 30′ W. 43° 05′ S.)". Juan Munoz (in discussion, 1972) knows of a colony at Punta Clara (65° 12′ W. 43° 57′ S.). Murphy is mis-quoted in the earlier paper; his only evidence that this species nests "From the Gulf of San Matias, Argentina, southward" was not Magellan's sighting. Murphy also refers to Burmeister, who wrote that "from about latitude 41° S. on the Patagonian coast the Jackass Penguins are more or less regular denizens of the islets, peninsulas and mainland beaches". The fact that Durnford (1878) found no penguins at Point Tombo at the end of December surprised Boswall & Prytherch, but in 1972 a new fact came to light. It is that in about 1930, when Carlos La Regina of Estancia La Perla was in his early teens, only a very small part of the area now occupied by nesting penguins was in use by them. Since then they have spread greatly.

With regard to breeding season, it is worth mentioning here, since the first paper was particularly concerned with this subject, that the peak of clutch completion in 1972 was not as early as 7th October, as Boswall & Prytherch speculated, assuming the birds lay eggs at the same time every year. It was well after 16th October and before 21st October. On 11th, inspection of 100 nests showed 52 with birds but no eggs, 35 with one egg and 13 with two eggs. Comparable figures for 16th were 21, 31 and 48; and for 21st October, 8, 17 and 74 plus one nest with three eggs. It must be concluded either that the incubation period of the closely related species *S. demersus* is not the same as that of *magellanicus*, or that egg-laying at Point Tombo was differently timed in 1971 and 1972. 1971/72 was an exceptionally cold winter in Patagonia and locals advised us that, at the time of our arrival, temperatures were still much below the usual ones for the time of year. But whether the coming ashore of the penguins would be influenced by local weather is not known, except that Carrara (1952) says " . . . the arrival on land for nesting is from the first days of September until the beginning of October; but there are small variations every year. The climatological conditions, specially the temperature, play a most important role in the dates of arrival on land". Meyer de Schauensee (1970) says of distribution of *S. magellanicus* "Breeds . . . coast of Argentina north to Santa Cruz". In fact the species nests north to the next province, Chubut.

Diomedea melanophris, Black-browed Albatross: One seen in flight.

Macronectes giganteus, Giant Fulmar (or Petrel): A single bird was seen at a floating penguin carcase, and on another day a group of about six birds were similarly engaged. Conway (1971) saw Giant Fulmars attack apparently adult penguins at Point Tombo.

Fulmarus glacialoides, Southern (or Silver-grey) Fulmar: One seen just offshore on 22nd October.

Phalacrocorax magellanicus, Rock Cormorant; *P. bouganivillii*, Guanay Cormorant; and *P. albiventer*, King Cormorant. All three species were back at the mixed colony .The two last were just starting to collect nesting material on 11th October. According to Carlos La Regina (personal discussion, 1972),

cormorant guano was taken from Point Tombo in about 1965 by a Japanese company.

Rodolpho Escalante (pers. comm. 1972) has drawn my attention to the fact that the observations by Erize (1972) on the first Atlantic-coast nesting of *P. bougainvillii* had first been published by Navas (1970). Erize (op. cit,) quoted Meyer de Schauensee (1970) to the effect that the nearest nesting Guanays, measured by the shortest sea route, were nearly 3,000 kms away on Mocha Island in Chile. Johnson (1965), however, says that this island, which lies at Lat. 37° 30′ S, was deserted by 1962 and that only the colony known to him in Chile is on Pupuya Islet at Lat. 33° 58′ S. about 400 kms further to the north.

Boswall & Prytherch (1972) quote Olrog (1968) on *P. albiventer* breeding on "the inland lakes in the province of Neuquen". Escalante (1971) quotes Navas (*Neotropica* 1970 (16): 140–144) to the effect that the birds in Neuquen are Blue-eyed Cormorants *P. atriceps*, and not *P. albiventer*. Since the latter "has been much confused with one or more races of *P. atriceps*" (Murphy 1936), it is worth mentioning that a colour photograph of those at Point Tombo was published by Erize (1970) and that two colour transparencies of mine are deposited in the University Museum of Zoology, Cambridge.

Phoenicopterus chilensis, Chilean Flamingo: Two parties of about a dozen birds seen. One party appeared to be feeding in the sea.

Cygnus melancoryphus, Black-necked Swans: Seven in flight on 22nd, twelve on 23rd.

Tachyeres patachonicus, Flying Steamer-duck: The identification of this species was confirmed by close field observation and the wing length of a drake found dead. Also, the identification of the birds in Parrinder's photograph as flightless Flying Steamer-ducks has been further confirmed by Milton Weller and O. S. Pettingill (pers. comm., 1972): "The birds are evidently moulting, being temporarily without most of their remiges, except for their tertials". The sizes of six eggs found in a nest just above high water mark on 22nd October were: 84.8 × 55.8 mm, 83.2 × 54.6 mm, 83.0 × 54.2 mm, 85.0 × 55.6 mm, 83.1 × 56.1 mm., and 84.6 × 55.5 mm. The respective weights were 140, 130, 130, 145, 140 and 135 grammes. A bird was put off this nest, but otherwise the birds were always in pairs, the two keeping very close together. As in the previous year, the pairs were spread out along the coast and each pair could always be found approximately where expected, (see also Prytherch, Boswall & MacIver, in preparation).

Vanellus chilensis, Southern Lapwing: One pair present and rather noisy.

Charadrius falklandicus, Two-banded Plover: One very young chick seen on 13th October.

Thinocorus rumicivorus, Least Seedsnipe: J. Daciuk tells me he has seen chicks of this species at Point Tombo.

Chionis alba, Snowy Sheathbill: Small parties near the extremity of the point; others in the penguin colony tidying up the remains of penguin eggs left by gulls or skuas.

Catharacta Skua, Great Skua: Skuas were in pairs and back in their breeding areas of the previous year. They would fly over to inspect any human intruder but did not mob. One was seen to snatch a penguin egg from a nest left unguarded because of human disturbance. Others were active in the burrow area of the penguin colony robbing Kelp Gulls of penguin eggs. With the exception of one buff-streaked bird, all had very dark plumage.

Leucophaeus scoresbii, Dolphin Gull: Up to seven together in the penguin colony trying to "cash in" on penguin eggs stolen by Kelp Gulls.

Larus dominicanus, Kelp Gull: Already in occupation of their nesting areas and very clamorous at the intrusion of an observer. A number of Kelp Gulls were very active in the penguin colony taking eggs, but they frequently lost them to skuas.

Sterna hirundinacea, South American Tern: Up to ten birds presumed to be of this species were seen on most days.

Sterna eurygnatha, Cayenne Tern: Four birds presumed to be of this species seen on 13th October.

Upucerthia dumetaria, Scale-throated Earthcreeper: A nest which had been exposed on 23rd by a human was brought to my attention. The tunnel had been 1.9 metres long, and had been hollowed from a vertical bank of soil-cum-shingle. At the end was a scant nest of dried grasses and five smooth white eggs. At least one bird returned and the same day tried to "mine" further beyond the nest, but no more activity was seen.

Lessonia rufa, Rufous-backed Negrito: A female was put off a nest built at the base of a small plant growing among rocks near the shore. It contained three eggs on 23rd, two eggs and one chick on 24th, and three chicks on 25th.

Diuca diuca, Common Diuca Finch: Birds almost certainly of this species were taking grass into a hole a couple of metres from the exposed Scale-throated Earthcreeper nest and it was presumed to be an unused burrow of that species.

ACKNOWLEDGEMENTS

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Regular Occurrence of *Porphyrula martinica* in South Africa

by W. Roy Siegfried & P. G. H. Frost

Received 25th November 1972

Ohlson (1972, *Bull. Brit. Orn. Cl.* 92: 92–93) has reported the occurrence of the American Gallinule *Porphyrula martinica* on the mid Atlantic islands of St. Helena and Ascension. The species is also a regular visitor to Tristan da Cunha (Elliott, 1957, *Ibis* 99: 545–586), To date. 11 specimens have been

obtained in South Africa (not 12 as stated by Broekhuysen 1971, *Ostrich* 42: 78–79). These birds were found within 160 km of Cape Town (33° 55′ S, 18° 22′ E). This paper reports a further record of *P. martinica* from Cape Town, and draws attention to the apparent regularity with which the species occurs in South Africa.

The bird was found at Camps Bay, 10 km from Cape Town, on 20th May 1972. It was rescued in an exhausted state from a cat, but rapidly recuperated when fed raw, lean beef. The bird was a first-year male in the process of acquiring adult plumage. It weighed 160 gm, 63% of the mean weight for 20 ♂♂ recorded by Hartman (1961, *Smith. Misc. Coll.* 143: 1–91). Other recorded weights of immatures (unsexed) recovered in South Africa are even lower, < 150 gm and 137 gm (Rowan & Winterbottom 1963, *Ostrich* 34: 249–250; Winterbottom 1965, *Ostrich* 36: 90–91). Mensural data taken from the bird are: culmen and shield 45·5 mm, wing 183·0 mm; tarsus 64·5 mm. The primaries and secondaries were unworn. The tail feathers were moulting. The adult purple abdominal and breast feathers were still sheathed at their bases, but the new bronze feathers of the upper parts were unsheathed.

This represents the twelfth record of *P. martinica* in South Africa. Two birds were recovered in April, four in May, four in June, one in August and one of unknown date. During the decade 1962–1972, nine birds (all immature) appeared in South Africa. 1968, 1969 and 1971 were the only years in which American Gallinules were not recorded. Thus, the species may be regarded as a more or less annual vagrant to the southern tip of Africa.

The prevailing winds over the south Atlantic during the austral autumn and winter are predominantly westerly, with winds of gale force being common. These conditions would favour forced down wind crossings of the south Atlantic by American Gallinules blown off course while either migrating or dispersing along the south eastern seaboard of the new world. It is somewhat remarkable how regular and often this relatively weak flying species makes the 8000 km journey to South Africa.

The peak of occurrence in South Africa (May–June) is about a month later than the peak on Tristan da Cunha (March–May, Rowan & Elliott, C. pers. comm.). This could suggest that the birds occurring in South Africa are secondarily derived from those on Tristan, where, having at least partially recovered, and still possibly being affected by the urge to migrate, they leave the Tristan group only to be transported westerly again to the southern tip of Africa. This suggested movement may explain why, in spite of the number of records down the years, there have been few reports of adults and no reports of attempted breeding on Tristan.

This may also explain the species' occurrence on Ascension and St. Helena. Ohlson (*op. cit.*) suggested that the Gallinules recorded there could have arrived via the south easterly trade winds (the prevailing winds in the mid Atlantic) after having been driven to the proximity of the African coast by the west winds of the south Atlantic. He alternatively suggested that the American Gallinules may have been derived directly from South America by being transported along the upper west wind layer that blows across the mid Atlantic at altitudes of 500 m and higher. However, in as much as they can be taken to mean anything, the dates of occurrence (in June) of the species on these islands slightly favour the first suggestion.

The above comments are, of course, largely speculative. The lack of data on weights of birds occurring in any of these areas precludes any interpretation of movements based on the relative weight losses of individuals surviving the south Atlantic crossing. In future, it might be possible to examine

stomach contents, specifically grit, and feather minerals (see Hanson & Jones 1968, *Biol. Notes Illinois Nat. Hist. Surv.* 60) in an attempt to determine not only an individual's origin but possibly also any stop-over localities. Anyone likely to gain possession of American Gallinules on either the mid or south Atlantic islands or in South Africa should bear this in mind.

The Nesting of Feral Pigeons *Columba livia* in Trees

by Jeffery Boswall

Received 19th January 1973

At Derek Goodwin's suggestion I made a few notes when in Buenos Aires, Argentina, on 30th October 1972, on the nesting of Feral Pigeons *Columba livia* in the trees of the city's sidewalks and plazas. Plaza San Martin, for example, has a large number of very mature trees of a species that fork at anything from about three metres to about nine metres from the ground. In the crooks of these, the birds commonly build their nest, see Plates 1 and 2.

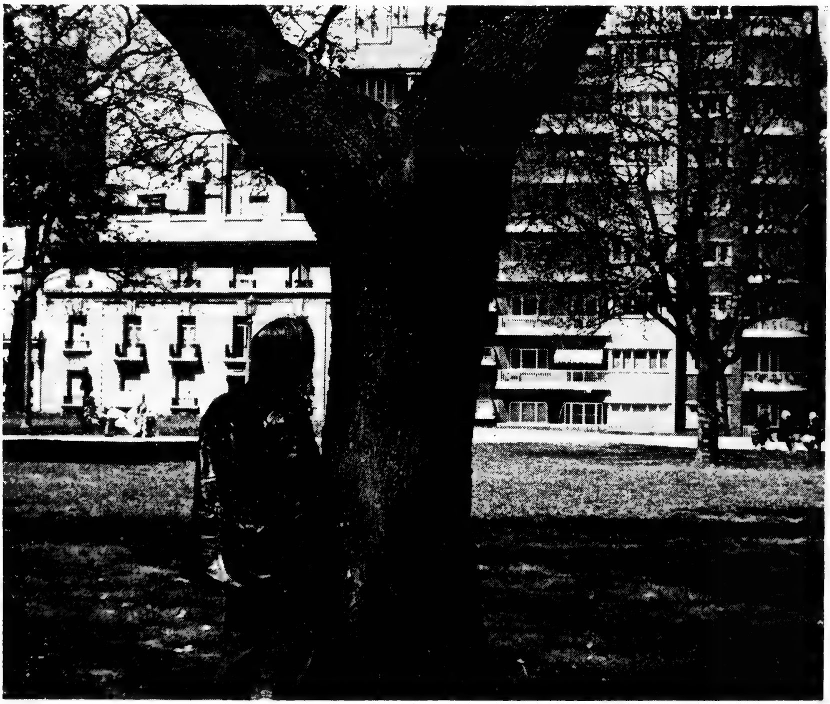

Photo: Jeffery Boswall

Plate 1 To show tree nest-site of Feral Pigeon *Columbia livia*, Plaza San Martin, Buenos Aires, Argentina. The nest is situated in the major "crook" of the tree immediately above the observer's head.

Photo: Jeffery Boswall

Plate 2 Feral pigeon *Columba livia* on typically exposed tree nest-site, Plaza San Martin, Buenos Aires, Argentina.

Apart from the branches of the trees, the nests were fully exposed to the sky. One particularly exposed nest was built on the stump of a sawn off branch. The nest material was mainly small dry twigs. The half-dozen nests I could see into had small young. The birds also nest commonly on city buildings, I was told, and as in other cities are commonly fed by the human populace.

One (rather poor) colour photograph submitted to Goodwin for determination of the colour pattern types brought the following comment, "there seem to be 16 barred blues (the wild colour-pattern), 23 dark blue chequers, velvets or blacks (probably all these but hard to say . . .). one dominant red (ash red in American parlance), one dark blue chequer with many white primaries, and one that is either a mealy or a light drizzle".

Tringa hypoleucos Linnaeus breeding in East Africa

by G. R. Cunningham & van Someren

Received 13th December 1972

The East African Natural History Society have been considering the question of naturalisation of some species generally regarded as migrants or other introduced species to East Africa. Forbes-Watson (1972).

The writer proposed that *Himantopus himantopus* (Linneaus) and *Recurvirostra avosetta* Linnaeus, which breed regularly at Lake Magadi Kenya, should be included, along with *T. hypoleucos*, as birds are present throughout the year and have been recorded as breeding, van Somerens (1911).

Backhurst (pers. comm.), editor of the Bulletin of the Society drew my attention to Benson *et al.* (1970) who quote Broekhuysen (1967) and Mackworth-Praed & Grant (1952) who accept *T. hypoleucos* as a breeding species while Moreau (1966) and Chapin (1939) rejected the breeding record of the van Somerens and Meinertzhagen and thus Benson *et al.* (op. cit.) followed suit and also rejected the record.

van Someren (1922, 1932) refers to this earlier breeding record but without re-quoting the data on which this was founded and doubtless the above-mentioned writers have not accepted the bare statements of these papers. However I would draw attention firstly to the 1911 work, "Studies of Birdlife in Uganda", where a photograph is reproduced, showing a bird on its nest in Uganda. The photograph was taken by Dr. R. A. L. van Someren and he describes how this was achieved and further adds "breeding is during August and September". He describes the eggs. This statement was quoted by Mackworth-Praed & Grant (op. cit.). The volume of photographs and text is probably not readily available and was perhaps overlooked.

Secondly van Someren (1936) writes of the Sandpiper "also resident in East Africa". He describes the nestling in down and under habits comments "is to a certain extent resident in both Kenya and Uganda and even breeds here" . . . " nest and young have been recorded in Uganda in June and a bird in breeding condition shot in May" . . . "we have taken or observed these Sandpipers throughout all months of the year on Lakes Nakuru and Naivasha". Neither of these two papers are mentioned by Benson *et. al* (op. cit.).

The fact that *T. hypoleucos* has been photographed on its nest in Uganda, the eggs and nestling described, etc., establishes the claim that it should now be considered an East African breeding species. It is certainly resident throughout the year in Kenya, as my own records show for my dam at Karen, near Nairobi.

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Seasonal movements of the black cuckoo-shrikes *Campephaga phoenicea* and *C. flava*, especially in eastern Africa

by P. L. Britton

The *Campephaga phoenicea* superspecies of Hall & Moreau (1970) ranges widely through Africa represented by three forms which are considered conspecific by White (1962). Two of these, *C. phoenicea* (Latham) and *C. flava* Vieillot, are apparently very tolerant ecologically, preferring woodland and savanna habitats, but found also in forest. The third form, *C. petiti* Oustalet, is a true forest bird confined to the more equable lower latitudes, and probably resident. The plots for all three forms in Hall & Moreau (*op. cit.*) indicate eastern and western populations of each. Two of the forms are sympatric in several areas, with considerable overlap of *phoenicea* and *flava* in the east. All are more or less sympatric near the Equator in eastern Zaire and western Kenya, and in the latter area the situation is further complicated by the presence of the closely related, forest-dwelling *C. quiscalina* Finsch. *Phoenicea* is a northern form ranging from about 14° N to 4° S in the west, 16° N to 1° S in the east; while *flava* is a southern form ranging from about 5° S to 22° S in the west, 5° N to 34° S in the east.

There is considerable controversy and confusion surrounding the taxonomic treatment of the two non-forest forms. The otherwise black males usually have brightly coloured shoulder patches, most often red in *phoenicea* and yellow in *flava*; but this aspect is not at all consistent for either form, not even at one locality. In eastern Africa the vast majority of male *flava* are entirely black, especially in central and southern Tanzania and southern Uganda. About half of the males in several areas of Kenya and northern Tanzania have yellow shoulders, but at Kabete, near Nairobi all eighteen birds checked for this character by G. C. Backhurst (*in litt.*) were entirely black. An analysis of any regular movements in these forms should help in solving this complex problem; in particular whether areas of apparent sympatry are occupied by only non-breeding birds.

The Common Black Cuckoo-Shrike *C. flava* was not included as a migrant by Moreau (1966). Yet as early as 1936 Priest had remarked that it is a breeding summer visitor to the Mashonaland plateau of Rhodesia; a view strongly supported by Vernon (1968) who suggested that the movement is altitudinal. Benson *et al.* (1970) showed that it is virtually absent from south-eastern plateau country, especially Zambia, from June to September. During the same period it is quite numerous below 3,500 ft.; a pattern which led the authors to believe that the great majority on the plateaus leave for the winter, moving generally eastwards into the low-lying valleys and Mozambique. Most recently, Prigogine (1972) has shown conclusively that in Zaire, excluding Katanga, it is a seasonal visitor from May to October. Prigogine considered it possible that some at least of these birds originate from Katanga while others originate from East Africa.

In order to investigate the situation in eastern Africa, dated records have been collected from resident observers and museum specimen labels, with the kind co-operation of many, all of whom are acknowledged later. The 710 dated records from southern Ethiopia, Kenya, Tanzania and southern Uganda are shown by months in Table 1. Monthly totals for this large area

TABLE 1

Distribution of *Campephaga flava* records in eastern Africa by months

	J	*F*	*M*	*A*	*M*	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*	*Total*
Tanzania south of 7°S, west of 38°E, Songea excluded	5	5	3	1	–	–	–	–	1	–	–	1	16
Songea District, S. Tanzania	12	3	2	1	2	2	–	–	2	12	10	16	62
Uganda; Tanzania west of 33°E	1	2	1	1	2	5	11	9	2	–	1	1	36
S.W. Kenya, 0°–3° S, 34°–36° E	2	–	–	1	3	6	14	7	3	16	–	3	55
Central Tanzania, 4°–7°S, 33°–38°E	2	1	–	6	1	4	–	5	5	3	4	1	32
"Coast", south of 4°S, east of 38°E	1	–	5	3	3	5	6	12	18	18	5	3	79
"Coast", north of 4°S, east of 38°E	–	3	3	5	2	8	9	31	2	1	2	8	74
Kenya & N. Tanzania, north of 4°S, 36°–38°E, Nairobi & Kabete excluded	11	10	12	6	10	15	14	23	19	10	3	7	140
Kabete, near Nairobi	1	3	–	2	1	2	8	11	15	28	1	–	72
Nairobi area, Kabete excluded	2	3	3	6	8	4	10	17	16	11	5	2	87
Kenya, 0°–2°N, 34°–36°E	3	5	1	1	–	6	13	2	8	12	3	3	57
Total north of 7°S	23	27	25	31	30	55	85	117	88	99	24	28	632
Total south of 7°S	17	8	5	2	2	2	–	–	3	12	10	17	78
Total	40	35	30	33	32	57	85	117	91	111	34	45	710

show that 70 per cent of records from north of 7° S fall in the months June to October, whereas 78 per cent of records from south of 7° S fall outside this period. Since the more or less coincident period from May to October is the time of the invasion in much of Zaire (Prigogine *op. cit.*) it is probably unreasonable to suppose that Zaire birds originate from anywhere but the south. Furthermore, the absence from south-eastern plateau country outlined above, documented in particular for Rhodesia and Zambia, more or less coincides with this invasion.

In the eight months from October to May, Benson *et al.* (*op. cit.*) had 300 specimen records from plateaus above 3,500 ft., compared with only about 100 from the whole area considered, including the plateaux, for the four months June to September. The fact that there were fewer data per month in the latter period is probably partly the result of less collecting in low-lying Mozambique than in either Rhodesia or Zambia; but the difference may also be due to a departure of some of these plateau-breeding birds from the whole area considered between June and September, not simply a movement within the area. It is likely that a proportion of individuals move into low-lying areas like Mozambique while others move to lower latitudes, into Zaire and eastern Africa. The Katanga region of southern Zaire is geographically intermediate which accounts for the more or less even distribution of records through the year (Prigogine *op. cit.*). Katanga data probably refer to both breeding birds and wintering birds, including passage migrants, and do not necessarily imply that birds in this area are resident.

The movements of *Cossypha natalensis hylophona* Clancey described by Britton (1971) are somewhat analogous since eastern Rhodesia plateau breeders move eastwards into Mozambique from about April to August, at which time birds breeding in southern and south-western Zambia, and adjacent areas, move northwards into Katanga and Moxico (Angola). These two breeding populations are quite disjoint so that it is comparatively easy to assign disjoint wintering areas to them. This is not the case with *C. flava* however, so that it is not possible to know which move to lower altitudes and which move to lower latitudes in the cold weather (dry season).

Non-coastal Tanzania south of about 7° S may be considered a part of the south-eastern plateau, receiving most of its rain from December to April (Griffiths 1958). All but one of the records from this area, Songea excluded, are for these months, when Lynes (1934 and specimen labels in B.M.[N.H.]) recorded considerable gonad activity in the majority of his specimens from Iringa and the Njombe Highlands. The data for Songea District, lying south of 10° S, are those of I. H. Dillingham (*in litt*,) who was resident there from March 1954 to July 1956. The bulk of records (80 per cent) refer to the period October to January, which are the months of egg-laying in adjacent Malawi and Zambia (Benson *et al.* 1964). Dillingham had no records for July or August, and returning from leave on 29th May 1955 he did not record this species until 20th September.

Southern Uganda and Tanzania west of 33° E, mainly the north-west, are peripheral to Prigogine's area, and evidently receive the same invasion from the south, with 26 out of 35 records in the three months June to August. Similarly south-western Kenya and adjacent Tanzania from the Equator to 3° S, 34° to 36° E, where 46 out of 55 records are for the months June to October (only three in September). In central Tanzania, 4° to 7° S, 33° to 38° E, there is evidence of passage birds, with 28 out of 32 records in the months March to May and August to November, and none in July which is the peak month to the north-west. In much of eastern Africa and Zaire the situation is complicated by the presence of breeding birds, but breeding is unknown and probably rare in the foregoing areas.

In coastal Tanzania, south of 4° S, 33° to 38° E, an area which includes also extreme south-eastern Kenya, the majority (48 out of 79) of records fall in the months August to October. There are however records for all months except February, and breeding is known from this area. Sclater & Moreau (1933) mention a nest with naked nestlings at Amari on 26th October, and Vaughan (1930) considers it probably resident on Zanzibar with a breeding season about October. In fact all three December records refer to the Usambara Mountains which include Amani, so that there is only one record for the coastal lowlands in the months December to February. In the mainly low-lying areas of eastern Kenya, Ethiopia and Somalia, east of 38° E, north of 4° S, 65 per cent of records are for the months of June to August, especially August with 31 out of a total of 74 records. All months except January are represented, with as many as eight in December. Almost half of the eastern Tanzania records are for the months September and October compared with only three out of 74 for these months further north in eastern Africa; a situation suggesting a southern origin for many individuals, returning south fairly early and hardly occurring north of 4° S after the peak month of August. East of 38° E it hardly occurs north of 2° S, and the population in south-eastern Ethiopia at about 5° N is an anomaly mentioned in more detail later.

During 25 years as a resident of Korogwe in north-eastern Tanzania, Archbold (1972) has recorded it only three times, in September, October and November.

The remaining, mainly highland areas of Kenya and northern Tanzania show the same June to October peak, but complicated by the presence of breeding birds and possible altitudinal movements within these areas. J. S. S. Beesley (*in litt.*) found three nests between 1,500 and 1,700 m a.s.l. in the Arusha National Park, northern Tanzania, indicating egg-laying in December January and April. Two eggs from Emali Hill, Sultan Hammud, Kenya collected by V. G. L. van Someren on 30th March 1940 were from one of several nests found on a visit to this area (G. R. Cunningham–van Someren *in litt.*). The same writer informs me of a nest at Karen, near Nairobi in May. A female with a large shell-less egg in its oviduct collected at Eldama Ravine on 4th April, and reported by Jackson (1938), is the only further Kenya breeding record. According to Urban & Brown (1971) it has been recorded breeding in Ethiopia in April and possibly in February, the latter being a bird with testes greatly enlarged collected at Yavello (B.M. [N.H.] collection). All of the above breeding sites are at about 1,500 m (a little under 5,000 ft.) or higher.

The fact that 62 per cent of the 351 records for this large area of Kenya and northern Tanzania are for the four months July to October strongly suggests that some at least are birds breeding in the southern tropics. No month lacks records completely however due to the presence of a minority of breeding birds. At Kabete, near Nairobi the observations of G. C. Backhurst (*in litt.*) and others over several years show a still clearer pattern with 62 out of 72 records for the months July to October. Surprisingly, 28 of these are for October, very late if they are indeed southern breeders. Some at least may be birds breeding at higher elevations in Kenya and northern Tanzania from about November to January, wandering to lower areas during the cold, damp months. The pattern is clear at other sites also, for example at Naivasha in the Rift Valley where all records are in July (three), August (four) and October (three).

In view of the April to October pattern of occurrences in south-western Zaire, documented by Prigogine (*op. cit.*), western birds probably move mainly northwards into this and adjacent areas during the dry season. Further south in Angola this is evidently a bird of plateau country breeding in October (Traylor 1963). It is unlikely that there is any regular altitudinal movement in Angola in view of the total lack of records from the coastal lowlands. I have not attempted to investigate the movements of western birds in any detail.

The Red-shouldered Cuckoo-Shrike *C. phoenicea* has been known to be migratory in parts of West Africa for some years, but regular movements have not been suspected elsewhere. Bannerman (1953) considered it partially migratory in Gambia, Sierra Leonne and Ghana, and Elgood (1959) considered it the only undoubtedly migratory African passerine at Ibadan, Nigeria. Elgood *et al.* (in press) have little doubt that it is truly migratory in western Nigeria, though not so in the east where, for example, it occurs around Enugu throughout the year. In the west it breeds in the north during the rains, retreating to the more equable lowland forest belt (for example at Ibadan) from about November to April.

Table 2 shows dated records of *C. phoenicea* from throughout its range. Sight records have been included for Ethiopia, Uganda and Kenya; elsewhere

TABLE 2

Distribution of *C. phoenicea* records by months

	J	*F*	*M*	*A*	*M*	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*	*Total*
Nigeria (9) & west (26), north of 7½°N	–	1	6	3	8	9	4	4	–	–	–	–	35
Nigeria (2) & west (10), south of 7½°N	1	7	–	–	2	–	–	–	–	–	–	2	12
Cameroon	3	1	–	1	2	2	1	–	–	–	–	–	10
Sudan & Zaire	5	5	3	5	1	5	2	2	2	–	–	1	31
Ethiopia & Somalia	9	6	7	6	10	10	3	4	1	1	8	19	84
Uganda & W. Kenya	8	8	8	9	5	4	5	3	4	3	4	5	66
Total	26	28	24	24	28	30	15	13	7	4	12	27	238

specimens only. Data from Nigeria and further west are split into those respectively north and south of 7½° N. In this area the northern limit of lowland forest varies from about 6° N to 9° N, rendering 7½° N a somewhat arbitrary line. Nevertheless a clear pattern emerges, with 34 out of 35 northern specimens between March and August, and 10 out of 12 southern specimens between December and February (the two in May are from the Prah River, southern Ghana). Bannerman (*op. cit.*) noted that it is seen only during the northern winter at Kumasi in southern Ghana, while in Sierra Leone it is more often seen from May to December. Sierra Leone specimens in Table 2 were collected in February, March (three), Mat and June (five), and all refer to the lowland forest belt, here extending to about 9° N. Some West African birds are no doubt more or less resident or at most wanderers, but the well-documented Nigerian pattern of a northward movement during the wet summer (breeding) months of March or April to September or October is widely applicable west of about 8° E.

Data from east of Nigeria show no clear pattern. The fact that only 21 per cent of records from throughout its range refer to the five months July to November invalidates any inference drawn from the comparative lack of records east of Nigeria during this period. This is especially true since these months follow the bulk of breeding in the northern tropics, so that if anything numbers should be swollen by the presence of young birds in the population. Such a lack represents either a lack of collecting during these months or an overall movement into little-worked areas. No pattern was evident when the records were accurately mapped, nor when areas like Ethiopia were split into highland and lowland regions.

Despite the lack of an overall pattern east of 8° E it is likely that this species wanders somewhat randomly over considerable distances, with a minority performing regular movements comparable to those further west. Ignoring the atypical western highlands of Ethiopia which extend north to about 16° N, the most northerly specimens are from about 12° N in the Sudan. Since they were taken by only three collectors these few specimens represent a biased sample, referring to April, June (two), July (four), August (five) and September. Despite the bias they indicate a northward movement during the summer rains, when Lynes (1925) recorded it breeding in July in the Darfur region of western Sudan. In contrast the unbiased records of Rev. P. J. Hamel (*in litt.*) and other residents of the Kampala area

of southern Uganda, virtually on the Equator, are mainly (24 out of 29) for the four months January to April, peaking in February (nine records). Some at least of these records probably refer to non-breeding visitors from the north, although it is known to breed in the south of its range also. Seth-Smith (1913) collected a clutch at Mpumu in southern Uganda on 31st March; van Someren (1916) collected a clutch at the Sezebwa River in southern Uganda in April; and Tennent (1965) watched a pair building at Kakemaga Forest in western Kenya in early June.

The important areas of apparent sympatry of *flava* and *phoenicea* are south-western Uganda, extreme western Kenya between Mt. Elgon and the Kavirondo Gulf, southern Ethiopia, and southern Sudan (a single male *flava* collected at Gilo). It has already been shown that southern Uganda *flava* are off-season birds breeding further south. In Central Nyanza, western Kenya, where I have been resident for over four years, I have recorded *phoenicea* only six times, in January, June, July (three) and October. These and the few other western Kenya records hardly overlap geographically with *flava* which occurs only to the north and east, and not to the north-west of this area, there being no Uganda records of *flava* east of Kampala. In the area of apparent sympatry (Central Nyanza, Kakamega, Kaimosi), 91 per cent of the 34 *flava* records fall in the months May to October when southern breeding birds probably penetrate beyond the Equator; so that the vast majority of *flava* may be considered non-breeders in the area of sympatry. The few Ethiopian specimens of *flava* are an anomaly since the only other specimens north of 2° N are from Kenya between 2° and $3\frac{1}{2}$° N in March, June (three), July (two), and a single specimen from southern Sudan in March. The scattered Kenya birds are probably mainly southern breeders but the few Ethiopian birds are likely to be more or less resident in view of two breeding records and the fact that they refer to the months February, June, July, September and December. This isolated population occurs east of the Rift, the male specimens available to me being from around 5° N. Only a single Ethiopian specimen of *phoenicea* is from south of the restricted *flava* area, and the vast majority of Ethiopian *phoenicea* are from the Rift and further north-west. Immatures and females have been ignored in critical areas, being mainly indeterminable.

Prigogine (*op. cit.*) has shown that the two closely allied forms, *C. flava* and *C. petiti*, overlap geographically in Zaire at a time when neither is breeding. In the areas of sympatry of *phoenicea* and *flava* the latter is a non-breeding visitor except in south-eastern Ethiopia where the few *phoenicea* are probably wanderers. The single Kenya nesting record of *phoenicea* is from an area where *petiti* is common, but there is no competition between these forms since *petiti* is found only in true forest. The *phoenicea* were building in an isolated forest patch.

SUMMARY

Account has been taken of 710 dated records of *Campephaga flava* from eastern Africa, and of 238 dated records of *C. phoenicea* from throughout its range, with a view to establishing the nature of any movements.

C. flava breeding in southern Africa north to about 7° S in the east, 9° or 10° S in the west, are mainly not resident, leaving plateau country during the dry months of May to September or October. Some move to lower altitudes at similar latitudes, especially into low-lying Mozambique, while others move north to lower latitudes. The latter account for the majority of records in

Zaire (excluding Katanga), Tanzania north of 7° S, southern Uganda and Kenya, exceptionally north to 3° N but mainly north to about the Equator. There are locally breeding, morphologically indistinguishable birds in highland areas of eastern Zaire, northern Tanzania and Kenya which probably move altitudinally to some extent. A localized population in south-eastern Ethiopia is an anomaly and probably mainly resident.

C. phoenicea is migratory in west Africa east to about 8° E, moving north from the lowland forest belt to breed during the rains from March or April to September or October. Further east movements are not clear-cut except at the northern and southern extremities of its range, in the Sudan and southern Uganda respectively, where the pattern of records follows that established for West Africa. Elsewhere movements are probably in the nature of random wanderings. It breeds locally throughout its range.

In the areas of apparent sympatry of these two non-forest forms in eastern Africa, *flava* is a non-breeding visitor except in south-eastern Ethiopia where the few *phoenicea* are probably wanderers. It is unlikely that they ever interbreed.

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If published data were also supplied in a list of specimens the reference is not given. Those marked with an asterisk are data sources not mentioned in the text.

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Bulletin of the

British Ornithologists' Club

Edited by

C. W. BENSON

Volume 93 No. 2 June 1973

Committee

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 93 No. 2 Published: 20 June, 1973

The six hundred and eighty-first meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday, 20th March, 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E.; present 26 members and 22 guests.

The speaker was Mr. Guy Mountfort, O.B.E., who gave an illustrated address on his recent visit to India, Pakistan and Nepal.

The six hundred and eighty-second meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday, 8th May, 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E.; present 16 members and seven guests.

The speaker was Mr. Tom Harrisson, D.S.O., O.B.E., who opened with some amusing recollections of meetings of the Club at the time when he had last spoken, 40 years previously. He then gave an illustrated address on the birds and bird cult of Easter Island and a fuller report on this will be published in a future number of the *Bulletin.*

Annual General Meeting

The eighty-first Annual General Meeting of the British Ornithologists' Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday, 8th May 1973 at 6 p.m. with Sir Hugh Elliott, Bt., O.B.E., in the Chair.

Eight members were present.

The Minutes of the 1972 Annual General Meeting (*Bull. Brit. Orn. Cl.* 92: 69–70) were approved and signed.

After a brief discussion on the Report of the Committee for 1972 (*Bull. Brit. Orn. Cl.* 93: 1–2), Mr. C. J. Mead proposed and Mr. J. H. Elgood seconded the adoption of the Report of the Committee for 1972 and this was carried unanimously.

Presenting the Accounts for 1972 (*Bull. Brit. Orn. Cl.* 93: 50–51) the Hon. Treasurer stated that 1972 was notable for the unusually large receipts from sales of back-numbers of the *Bulletin*. It was extremely unlikely that they could be maintained at about £400 a year and in addition the printers had just announced a 10% increase in their charges for printing, which would cost the Club about £90 in the current year and some £120 in a full year. The charge for subscribers to the *Bulletin* had been raised in 1972 from £3 to £3·50, to take effect from 1st January 1973, which would bring in about £50 more, but an increase in membership was essential. The Hon. Secretary stated that a leaflet, which it was hoped would produce more new members, would be distributed in the July *Ibis*. Mrs. J. D. Bradley proposed and Mr. J. H. Elgood seconded that the Accounts for 1972 be adopted and this was carried unanimously.

There being no nominations additional to those of the Committee, the following elections were made:—

Hon. Secretary: Mr. R. E. F. Peal (re-elected)

[continued page 52]

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st DECEMBER, 1972

1971 £	EXPENDITURE	£·p	£·p
	Bulletin Volume 92—		
	Cost of Publication, Distribution, Index, etc.	1,098·31	
746	*Less:* Sales	250·53	847·78
68	Notices, etc. for Meetings		72·88
21	Audit Fee		21·00
32	Lecture Expenses		53·27
91	Miscellaneous Expenditure and Postage		73·26
10	Projector Depreciation		10·00
10	Loss on sale of Projector and Lantern		—
16	Balance, excess of Income over Expenditure carried down		—
£994			£1,078·19
	Balance, excess of Expenditure over Income brought down		428·54
246	Transfer to General Fund		132·73
£246			£561·27

Note: No allowance has been made for subsciptions received in 1972 for future years.

1971 £	INCOME	£·p	£·p
	SUBSCRIPTIONS:		
	Members	495·61	
740	Associates	2·10	497·71
72	Income Tax recovered under Deeds of Covenant 1971/72		73·60
	INVESTMENT & DEPOSIT INCOME:		
	General Fund	29·36	
82	Trust Fund	48·98	78·34
100	Donation		—
	Balance, excess of Expenditure over Income carried down		428·54
£994			£1,078·19
16	Balance, excess of Income over Expenditure brought down		—
82	Sales of *Bulletin* for previous years		410·19
148	Rent less Expenses—property at Clovelly		151·08
£246			£561·27

BALANCE SHEET, 31st DECEMBER, 1972

1971 £		£·p	£·p
	General Fund		
	As at 31st December, 1971	829·44	
830	*Add:* Transfer from Income and Expenditure Account	132·73	962·17
	Bulletin Fund:		
109	Donations from Members		110·15
56	Creditor		56·00
£995			£1,128·32
	Trust Fund:		
	(The Capital of this Fund may not be used—the Income from it is General Revenue)		
1,000	F. J. F. Barrington Legacy		1,000·00
£1,995			£2,128·32

1971 £		£·p	£·p
	General Fund, Investment		
100	£100 $8\frac{1}{2}$% Treasury Loan 1980/82 at cost	100·00	
20	*Less:* Reserve	20·00	
80	(£106 Market Value £96)		80·00
	Projector & Screen		
	Addition at Cost	100·00	
90	*Less:* Depreciation	20·00	80·00
1	Stock of *Bulletin*—Nominal Value		1·00
	No value has been included for the stock of the Scientific Index		
101	Debtors		86·53
177	Cash at Bank—Current Account	310·15	
546	—Deposit Account	570·64	880·79
995			£1,128·32
	Trust Fund, Investment		
1,000	£1,399·55 $3\frac{1}{2}$% War Stock		1,000·00
	(£581 Market Value £504)		
£1,995			£2,128·32

Sir Hugh Elliott, *Chairman*

P. Tate, *Hon. Treasurer*

We have prepared the above Balance Sheet and annexed Income and Expenditure Account from the books and records of the Club and certify them to be in accordance therewith.

Knightway House,
20 Soho Square, London, W1V 6QJ.
28th March, 1973

NORTON KEEN & CO.,
Chartered Accountants.

Hon. Treasurer: Mr. P. Tate (re-elected)

Committee: Mr. J. H. R. Boswall

The Editor stated that the publication of the *Bulletin* quarterly had presented no great difficulties. There were ample papers of a high standard being offered but the average time from receipt to publication was only four months.

The meeting closed at 6.25 p.m.

A recent immigrant to Ontong Java atoll, Solomon Islands

by T. P. Bayliss-Smith

Received 2nd April, 1973

The work of MacArthur & Wilson (1967) is founded on the notion that on an island there exists a tendency towards an equilibrium condition in its biota. An equilibrial species number is reached at the intersection point between the curve of rate of immigration of new species not already on the island, and the curve of extinction of species from the island. The general idea of a balance of immigration by extinction was originally suggested to these authors by the impoverished bird faunas of the islands of central and eastern Polynesia (MacArthur & Wilson 1963). The theory has received empirical support from some remarkable experiments by Simberloff & Wilson (1969–70) on the recolonization of depopulated mangrove islands by insects, and from the work of Diamond (1969, 1971) on the turnover rates of the bird populations of Californian and New Guinean islands. One disadvantage of these studies is the cross-sectional character of the field data. The island populations are surveyed at intervals in time, but little is known about what happens in between surveys. The actual processes of immigration and extinction must usually be deduced from considerations of island size and distance from the source area.

It is of interest, therefore, to record an actual case of the colonization of an island by a new bird species. The birds of Ontong Java atoll, Solomon Islands, were observed over a one-year period from June 1970 to May 1971. Eight species of land birds were recorded of which seven were breeding residents and one, *Eudynamis taitensis,* was a seasonal migrant (Bayliss-Smith 1972). In July 1972 the atoll was revisited. A new species, *Eos cardinalis,* the Cardinal Lory, was found to be present. A noisy flock of about twelve of these long-tailed scarlet parrots was seen on several occasions on Luangiua islet. Reliable native informants stated that these unmistakable newcomers were present on all the islets between Keila and Henguakaha on the southern and eastern sides of the atoll. They have been named "kesivi", and were first seen after a period of south-westerly gales at the beginning of June 1972. These winds were generated by Cyclone Ida, a small hurricane which formed on May 31st over the ocean east of Bougainville and moved during the following day southwards and eastwards across Choiseul and Santa Isabel, causing much local destruction (British Solomon Islands 1972). *Eos cardinalis* is exceedingly numerous throughout the Solomon Islands from Nissan to Ugi, and "large flocks . . . are often seen flying from one island to the next" (Mayr 1945: 230). It must be assumed that one such flock was blown out to

sea by the hurricane and found refuge on Ontong Java, which lies 250 km north-east of Choiseul and Santa Isabel.

Four months after its first arrival *Eos* appeared to be flourishing in its new atoll environment. Although there were no reports of nesting, there seems to be no reason why a breeding population should not become established. The vegetation of the islets where it has settled is mainly coconut woodland, a habitat very similar to the coastal coconut plantations of the Solomon Islands where *Eos* is so numerous. There are already complaints by local people of damage caused by the birds to the flowers of coconut palms. The ecology of the species involved is not well known, but it is probable that *Eos* will compete both for food and nest sites with the two Ontong Java pigeons *Ducula pacifica* and *Caloenas nicobarica,* and possibly also with the Atoll Starling *Aplonis feadensis*. It will be interesting to see in the future whether the atoll can accommodate the newcomer without the displacement of one of the existing residents, or whether a total of eight land birds is in fact the equilibrium species number for an atoll of this size.

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The correct spelling of Scopoli's specific name for the Maylaysian Crested Wood Partridge *(Rollulus)*

by John Farrand, Jr. & Storrs L. Olson

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For more than a century the specific name of the Malaysian Crested Wood Partridge has been subject to persistent mis-spelling. Some authors have listed the species as *Rollulus rouloul* (Scopoli) but most, inserting a second *r*, have cited it as *Rollus roulroul,* still under the authorship of Scopoli. Basing his description on "Le Rouloul de Malacca" of Sonnerat (1782: 174, 286, pl. 100), Scopoli (1786: 93) named the bird *Phasianus* (*Rouloul*). Owing perhaps to the rarity of Scopoli's publication, his name was subsequently overlooked, generally in favour of *Columba cristata* Gmelin (1788, vol. 1, pt. 2: 774). The vernacular name "Rouloul" did, however, serve as the basis for the genus *Rollulus* Bonnaterre (1791, vol. 1: xciii).

Scopoli's name was resurrected by G. R. Gray (1844: 42; 1846, vol. 3: 507; 1870: 269) who unfortunately mis-spelled it *roulroul.* Since the

publication of these works by Gray, the spelling *roulroul* has appeared frequently in the literature, and with the use of this spelling by Ogilvie-Grant (1893: 225), who evidently followed Gray, and by Peters (1934: 104), the erroneous spelling has all but supplanted that appearing in Scopoli's original description. Notable exceptions have been, among others, the several papers on the birds of Borneo by R. B. Sharpe (1876: 51; 1879: 270; 1881: 800; 1890: 140) and by Salvadori (1874: 308), in which the bird is listed as *Rollulus rouloul*. Baker employed both spellings in the second edition of the *Fauna of British India*, calling the species *Rollulus roulroul* in Volume 5 (1928: 368) and *Rollulus rouloul* in Volume 7 (1930: 459). More recently, the original spelling of Scopoli has been used by Smythies (1960: 168; 1968: 172). Most other works published within the last fifty years have listed the species as *Rollulus roulroul*.

We are not aware of any published, formal emendation of Scopoli's name. Indeed, such an emendation would not be justified, since there was no error on Scopoli's part. He based the name on "Le Rouloul" of Sonnerat, who clearly intended this spelling, as it reappears in the second edition of his *Voyage* (1806: 300). It is evident therefore that Scopoli's original spelling should be used and that the Malaysian Crested Wood Partridge should be referred to as *Rollulus rouloul* (Scopoli). This spelling may be adopted without application to the International Commission on Zoological Nomenclature, since it has been used within the last fifty years, and therefore is not a nomen oblitum as defined in Article 23b of the 1961 and 1964 International Code of Zoological Nomenclature (see also Corliss 1972).

We would like to thank S. Dillon Ripley and George E. Watson for helpful suggestions during the preparation of this manuscript, and Jack F. Marquardt for making it possible for us to examine an original copy of Scopoli's *Deliciae* in the Smithsonian Institution libraries.

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Notes on a Lanner with malformed bill, and on hornbills feeding on oil palm fruits

by W. R. J. Dean

Received 21st March, 1973

In August 1970 an immature Lanner *Falco biarmicus* was found dead on the national road 16 km north-east of Christiana, Transvaal, South Africa. The bird was made into a study skin and is now in the collection of the Alexander McGregor Memorial Museum, Kimberley (specimen no. NMK/B/1180). It has the upper and lower mandibles malformed as shown in the Plate. The upper mandible curves down sharply and is twisted laterally to the right crossing the lower mandible which has projected beyond the upper by 5 mm. The lower mandible is also twisted laterally. On dissection the bird

Immature Lanner with malformed bill.

proved to be in fair condition with a small amount of fat present. The severely abraded condition of the rectrices and primaries indicated that it had been obtaining food by scavenging along roads.

Brooke & Jeffery (1972, *Bull. Brit. Orn. Cl.* 92: 19) list several species of birds, including three hornbills, taking nuts of the oil palm *Elaeis guineensis*. In the Quicama National Park, Luanda, at ca. 9° 20'S., 13° 46'E., the Crowned Hornbill *Tockus alboterminatus* was recorded on seven occasions between 26 July and 13 August 1972 feeding on oil palm nuts, and the Yellow-billed Hornbill *T. flavirostris* as twice taking oil palm nuts at the same time and place. The stomach contents of a female Laughing Hornbill *Bycanistes sharpii*, collected on 16 August 1972 in evergreen forest about 20 km north of Cabinda, consisted of oil palm nut fibre and oil. I am grateful to the Peabody Museum of Natural History, Yale University for the opportunity to make these hornbill notes.

Diomedea cauta in South African waters

by C. M. N. White

Received 14th March, 1973

This albatross has long been recorded from the coastal waters of South Africa in the form *D. c. salvini* which breeds at Snares Island and Bounty Island, south of New Zealand. It now appears that the nominate *D. c. cauta* which breeds on islets off Tasmania, and at Auckland and Disappointment Islands, also occurs. My attention was drawn to this fact by the reference in Checklist Committee, Orn. Soc. N. Z. (1970).

Dr. F. C. Kinsky of the Dominion Museum, Wellington, New Zealand has kindly given me further details. Three birds are recorded, all banded at sea off Cape Campbell, north-east corner of the South Island of New Zealand:

(a) No. 19289. Banded 4.3.1958: recovered off Port Nolloth, 3.5.1959.
(b) No. 19354. Banded 9.1.1957: recovered off Danger Point, 30.8.1962.
(c) No. 16117. Banded 24.1.1957: recovered off Jeffrey's Bay, 29.9.1968.

According to Dr. Kinsky the first two recoveries were published in the 10th and 13th Annual Reports of the New Zealand Bird Banding Scheme, published by the Dominion Museum in 1960 and 1963 respectively. The third was mentioned by Robertson (1972: 71). Dr. Kinsky, to whom I am much indebted for this information, comments that these birds were banded during the New Zealand breeding season, and were probably sub-adult non-breeding birds. Most of the nominate form are thought to remain in New Zealand waters throughout the year.

Differential diagnoses of the forms can be found in Falla *et al.* (1966: 34) and Serventy *et al.* (1971: 70–71). This note is published in case students of African sea-birds overlook these records, which provide an additional form to the African marine bird fauna.

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Winter bird populations of Golfo San Jose, Argentina

by J. R. Jehl, Jr., M. A. E. Rumboll & J. P. Winter

Received 6th February, 1973

INTRODUCTION

Five hundred miles south of Buenos Aires, Argentina's Valdés Peninsula juts into the Atlantic Ocean. Its irregular dumbell-like shape is caused by two large bodies of water, Golfo Nuevo to the south and the smaller Golfo San José on the north, which cut deeply into the peninsula and nearly separate it from the mainland. The peninsula and its adjacent waters are attractive to a variety of sea birds and marine mammals. Although there are nesting colonies of cormorants, gulls, and terns there, the primary attractions are the large herds of elephant seals and sea lions.

In the austral winters of 1971 and 1972, the R/V *Hero*, a research vessel of the U.S. National Science Foundation, supported biological field studies along the coast of Argentina. During 22–23 June and 1–7 July 1971, and 4–19 August 1972, the *Hero* was engaged in bird and mammal research in Golfo San José. This gulf is approximately 12 miles wide and 25 miles long. Its entrance is narrow, and the swift currents and shoal waters there create feeding conditions that attract many species of pelagic birds. In mid-gulf depths reach 35–40 fathoms, but the waters within a mile or so of shore are extremely shallow, and at low tide extensive mudflats a half-mile wide are exposed in some areas. The perimeter of the gulf is dominated largely by sandy beaches, some of which are thickly covered with layers of scallop shells. Particularly along the southeast shore, steep, poorly-consolidated sandstone cliffs drop directly into the water. In other areas, but mainly along the north and south shores, there are scattered, dark-coloured mudstone outcrops, some of which are covered with mussel beds. The richest concentrations of birds are usually encountered along the south shore of the gulf, especially in the vicinity of Isla de los Pajaros. This tiny island provides

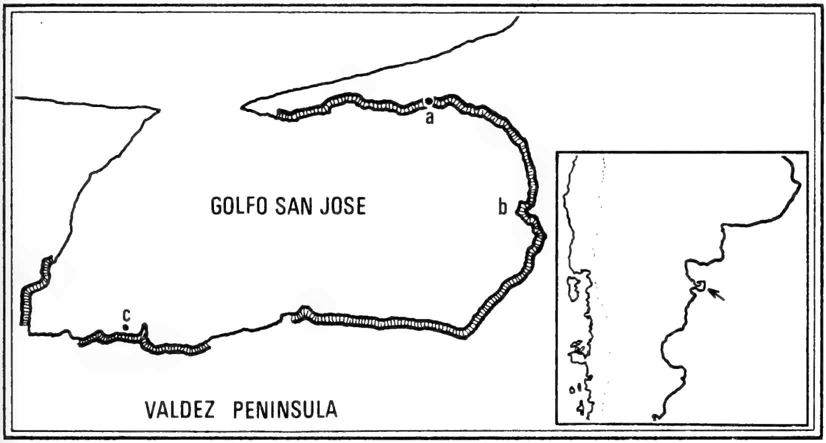

Figure 1. Golfo San José on the Valdés Peninsula, Argentina: a, San Roman; b, Punta Conos; c, Isla de los Pajaros. Cross-hatched areas along shore were censused in 1972. Insert shows the location of the Valdés Peninsula.

undisturbed resting and feeding grounds for many shorebirds and waterfowl, and in summer several species of aquatic birds nest there.

In 1971, Jehl made preliminary censuses of birds along the entire south shore and parts of the western shore; approximately 30 miles of coast were surveyed casually. In 1972, we were able to make detailed censuses along 58 miles of the bay's approximately 80 miles of coastline. The areas censused are shown in Figure 1. Censuses were made either by walking along the beach or by observing from a small air boat that could operate within a few yards of shore. By taking into account the types of habitat in areas we were unable to visit, we could, through extrapolation, estimate populations for the entire coast of the gulf. Numbers observed in areas censused more than once showed little variation from day to day, indicating (1) a relatively stable population at this season and (2) reasonable censusing techniques. We believe that our estimates are accurate to within 10 per cent.

Although there are annotated lists of species for a few areas (e.g., Punta Tombo: Boswell & Prytherch 1972; Puerto Deseado: Zapata 1967) ours are apparently the only quantitative data on population sizes of shore-inhabiting birds for any area of the Argentine coast at any season of the year.

TABLE 1
Winter bird populations of Golfo San José, Argentina

Species	1971 Estimate	1972 Count	1972 Estimate for entire gulf
Spheniscus magellanicus	100	250	400+
Podiceps rolland	20	1	1
Podiceps occipitalis	5	43	50
Podiceps major	10	42	50
Diomedea melanophris	30	150	150
Macronectes giganteus	10	10	30
Fulmarus glacialoides	—	1	1
Daption capense	2	6	20
Pachyptila sp.	40	2,000	2,000
Procellaria aequinoctialis	2	60	80
Puffinus griseus	500	2,000	2,000
Puffinus gravis	10	—	—
Oceanites oceanicus	5	—	—
Phalacrocorax olivaceus	100	143	180
Phalacrocorax magellanicus	—	84	84
Phalacrocorax atriceps	50	53	70
Phalacrocorax albiventer	1,000+	613	850
Casmerodius albus	2	4	4
Nycticorax nycticorax	50	68	75
Phoenicopterus chilensis	300	214	214
Chloephaga picta	3	40	40
Tachyeres patachonicus	8	23	25
Lophonetta specularoides	70	233	280
Anas flavirostris	6	6	6
Anas georgica	—	46	46
Falco peregrinus	—	1	1
Falco femoralis	1	—	—
Haematopus palliatus	500	492	600
Haematopus leucopodus	100	175	175
Haematopus ater	8	22	22
Vanellus chilensis	—	1	1
Charadrius falklandicus	200+	1,560	1,800
Zonibyx modestus	1	—	—
Pluvianellus socialis	30	10	10
Calidris canutus	1	36	36
Calidris bairdii	4	16	20
Calidris fuscicollis	50	7	10
Calidris alba	—	—	50
Thinocorus rumicivorus	—	50	50
Chionis alba	100	162	180
Catharacta skua	3	6	6
Leucophaeus scoresbii	4	2	2
Larus dominicanus	1,000+	4,300	4,800
Larus maculipennis	50	466	500
Sterna hirundinacea	150	160	200
Sterna trudeaui	—	12	12
Thalasseus maximus	1	4	4

In each year, the *Hero* made several transects of the open gulf, and many extended cruises along its shores. Estimates of pelagic species were made on these occasions, but abundance varied markedly. For these species, the number presented in Table 1 represents the maximum concentrations observed in the census period.

For most species there were no important annual differences in abundances, at least in those areas that received comparable study. It would appear, therefore, that winter bird populations utilizing this area are largely stable during the months of June, July, and August.

Surface water temperatures averaged 10° C. in 1971 and 9° C. in 1972.

This research was supported by a grant from the National Science Foundation (NSF-6V-32739).

WINTER BIRD POPULATIONS

Penguins: An estimated 400 Magellanic Penguins *Spheniscus magellanicus,* of which approximately 10 per cent were immatures, wintered in Golfo San José in 1972. They were widely scattered through the gulf, but concentrations could usually be found near the mouth and along the southeast shore. The largest concentration, 210 birds on 12 August, was observed in mid-gulf in association with flocks of Sooty Shearwaters *Puffinus griseus,* prions, and other pelagic birds. Two penguins collected had fed on a small fish *Nothotenia guntheri*, and others that could not be identified. The prevailing westerly winds cause birds dying in the bay to accumulate along the east shore. The thick pelts of penguins resist decay, and one can find the mummified remains of one or more every 30 metres along this sandy beach.

Grebes: Grebes were generally uncommon and tended to be concentrated in small flocks near the south shore. The largest flock of Great Grebes *Podiceps major* in 1972 was 25, and of Silvery Grebes *P. occipitalis* 15. These concentrations were similar to those of 1971. Only one White-tufted Grebe *P. rolland* was seen in 1972, as compared to a single flock of 20 in 1971.

Seabirds: Seabird numbers in Golfo San José fluctuated daily. Large concentrations were usually present near the mouth of the gulf, but the occurrence of concentrations elsewhere was much more variable. In most cases we were unable to associate environmental factors with the presence of particular species. However, on days of moderate to strong breezes large numbers of Sooty Shearwaters appeared in the southeastern corner of the gulf. It was not unusual to see 1,500 to 2,000 birds in that area, mostly feeding on small fish a mile or so from the shore. On several occasions flocks of several hundred to 2,000 fed at the surfline in association with Brown-hooded Gulls *Larus maculipennis.*

In general, the numbers and distribution patterns of seabirds showed little variation between years. The apparent increased abundance in 1972 (Table I) largely reflects a huge concentration in mid-gulf on 12 August which included 130 Black-browed Albatrosses *Diomedea melanophris,* 2,000 prions *Pachyptila* spp., 60 Shoemakers *Procellaria aequinoctialis,* 800 Sooty Shearwaters, 130 Magellanic Penguins, 650 Kelp Gulls *Larus dominicanus,* and 30 South American Terns *Sterna hirundinacea.* The 1971 data more closely approximate the average daily numbers that can be expected.

The absence of Greater Shearwaters *Puffinus gravis* and Wilson's Petrels *Oceanites oceanicus* in 1972, and the presence of a Southern Fulmar *Fulmarus glacialoides* may be attributable to the later date and colder waters in that year.

We were unable to collect any of the prions for positive identification; a single *Pachyptila belcheri* was found freshly dead on the beach.

Cormorants: Four species of cormorants winter, and one breeds in Golfo San José. A colony of Olivaceous Cormorants *Phalacrocorax olivaceus* nests on Isla de los Pajaros (see Ragonese & Piccinini 1972; Figs. 14, 16, 21, 23). In winter the species is usually encountered feeding in very shallow water, in areas where the bottom is sandy, mainly along the south shore.

The Rock Shag's *P. magellanicus* distribution is localized, and for this reason the species was not encountered in 1971. Roosts are located on the east and north shore, where steep cliffs plunge directly into the water. The major roost, of about 50 birds, is at Punta Conos (Fig. 2); smaller roosts occur

Figure 2. Rock Shags *Phalacrocorax magellanicus* at roost at Punta Conos, Golfo San José.

near the mouth of the gulf and at Isla de los Pajaros. Rock Shags feed near shore at depths of 10-20 metres. Several birds collected had fed on small fish and on a small octopus *Octopus tehuelchus* which lays its eggs in the empty shells of pelecypods such as *Chione antigua* (Cancelles 1944).

The commonest cormorant in the gulf is the King Cormorant *P. albiventer*,

which occurs nearly everywhere. Roosts of up to several hundred birds are scattered along the coast, two of the largest being near Bahía San Román. The Blue-eyed Cormorant *P. atriceps* associates with King Cormorants, comprising from 5 to 10 per cent of mixed flocks. These two species feed together mainly in deeper waters. Blue-eyed Cormorants seem to be commoner near the mouth of the gulf than farther inshore.

One of the most striking aspects of cormorant biology was the rarity of immatures among the non-resident species. Only 4 of 84 Rock Shags were immature; immatures comprised no more than 10 per cent of the King Cormorant flocks, and only one immature Blue-eyed Cormorant was identified, despite careful searching. Many young Olivaceous Cormorants were present, but we made no estimates of their relative abundance.

Flamingos, Herons: Several hundred Chilean Flamingos *Phoenicopterus chilensis,* including one white-plumaged juvenile that appeared to be no more than two-thirds grown, wintered along the southwestern corner of the gulf in 1971. Fewer were present in the same area in 1972. Whether the apparent decrease reflects the later time of observation or local differences in the ecology of nearby inland lakes where flamingos also feed, is unknown. Human disturbance may also be important, for even in this remote area we found several birds that appeared to have been shot.

In both years Common Egrets *Casmerodius albus* were rare, and were found only on the south side of the gulf. Black-crowned Night Herons *Nycticorax nycticorax* were commoner and are presumably resident. Although these birds could be found on rocky outcrops along the entire coast, the majority of the population was centered at a roost on Isla de los Pajaros. The extremely dark coloration of these herons was striking. In 1971 Jehl saw two melanistic birds there and several that approached this condition; in 1972 we also saw several extremely dark individuals, but none that was truly melanistic.

Waterfowl: The main habitat for waterfowl is along the south and west coasts where extensive clay terraces and mudflats are exposed at low tide. The Crested Duck *Lophonetta specularoides* is by far the most abundant species, occurring along all coasts. Isolated pairs are the rule, but flocks of up to ten were seen. This species breeds locally, but migratory birds from farther south probably augment the winter population.

Flying Steamer Ducks *Tachyeres patachonicus* are probably winter visitors to the area. In the gulf they are found almost exclusively along the west and southwest shores. Small numbers of Brown Pintails *Anas georgica* and Yellow-billed Teal *Anas flavirostris* were present, but these species prefer ponds inland on the peninsula.

Sheld Geese *Chloephaga* spp. are seldom seen along the coast, but Golfo San José seems to be on the migration path. On 12, 13, 14 and 19 August, 17 flocks of up to 200 geese, totalling 1,100 individuals, were observed heading southwest over the gulf. Nearly all were Upland Geese *C. picta*, but two Ruddy-headed Sheld Geese *C. rubidiceps* were identified among them. (These migrants are not included in Table 1.). The increased numbers of Upland Geese utilizing the shore of the gulf in 1972 as compared to 1971 is doubtless due to the arrival of migrating individuals.

Hawks and Falcons: Except for a single Aplomado Falcon *Falco femoralis* in 1971 and an immature Peregrine Falcon *F. peregrinus* in 1972, we saw no evidence of predatory birds along the shore of the gulf. The Aplomado Falcon was hunting shorebirds at a mudflat; the Peregrine made a playful

pass at a small group of night herons. In 1972 we found a South American Tern *Sterna hirundinacea* that had been eaten by a falcon.

Several large nests on steep cliffs along the south shore were presumably made by Black-chested Buzzard-Eagles *Geranoaetus melanoleucus*, but we did not observe this species in the immediate area.

Shorebirds: American Oystercatchers *Haematopus palliatus* are abundant residents of Golfo San José. Along the sandy beaches of the south and east coasts the population averages eight to ten pairs per mile. Cliffs along the north shore limit oystercatcher habitat there, but even so the birds remain extremely common. We estimated the population at 600 individuals. The species seems to maintain territories all the year, so that in most areas pairs are spaced out regularly along the beach. However, in some areas, such as Isla de los Pajaros, flocks of 20 or more occurred and fed together without interaction on the exposed mudflats.

Figure 3. A pair of American Oystercatchers *Haematopus palliatus* left, and a hybrid with a Blackish Oystercatcher *H. ater,* Golfo San José.

In several locations (e.g., Punta Conos, Isla de los Pajaros) dark mudstones outcrop along the bay, and many are covered with extensive mussel beds. These areas provide habitats for the small resident population of Blackish Oystercatchers *H. ater*. This species occasionally hybridizes with *H. palliatus* in this area (Fig. 3, and Jehl in prep.).

Wintering Magellanic Oystercatchers *H. leucopodus* occupied the mudflats of the southwestern corner in each year. These birds tended to remain together in large flocks and did not usually associate with or interact with the American Oystercatchers that utilized the same feeding areas.

Small flocks of Falkland Plovers *Charadrius falklandicus* occurred on almost every mudflat. Most flocks consisted of 10 to 15 birds, though some were as large as 200. The huge increase in 1972 is almost certainly a result of improved censusing.

An unexpected find was that small numbers of Magellanic Plovers *Pluvianellus socialis* wintered in the area. This is the northernmost report for the species. Details of the winter ecology and behaviour of this rare shorebird will be published elsewhere (Jehl in prep.).

The strongly compacted clays which form the beach over much of Golfo San José are almost impenetrable. Consequently, feeding habitats for probing birds are virtually lacking. Small numbers of "summering" northern hemisphere sandpipers *Calidris canutus, C. bairdii, C. fuscicollis, C. alba* were found in each year. These birds tended to feed in intertidal regions in association with Falkland Plovers.

Least Seedsnipe *Thinocorus rumicivorus* were seen sparingly in 1972 only. Scattered individuals fed on exposed tideflats along the southwestern shore, and small flocks were occasionally flushed from sand dune areas along the eastern shore.

Snowy Sheathbills *Chionis alba* were found on clayflats and mussel beds along the entire coast but principally on the south shore.

Skuas, Gulls, Terns: Approximately six Great Skuas *Catharacta skua* wintered in the gulf in 1972 and were usually found in association with the flock of Sooty Shearwaters. Most of the birds seen well, as well as two that were collected, had reddish underparts and were referable to *C. s. chilensis.* However, at least one (two?) bird in the gulf, seen on 9 and 16 August, was extremely dark and certainly was not of that race. Two of the three Great Skuas seen well in 1971 were also referable to *chilensis.* We watched two skuas making alternate swoops on a swimming and apparently healthy Great Grebe, but without success.

A population of 4,300 Kelp Gulls *Larus dominicanus* was estimated in 1972. As in 1971, well over 95 per cent of the birds were adult. A small colony breeds at Punta Conos, where 30–50 deserted nests were found, and a large colony nests at Isla de los Pajaros (Ragonese & Piccinini 1972). Brown-hooded Gulls *L. maculipennis* were far commoner in 1972 than in 1971, perhaps because of an influx of migrants. The main concentrations occurred along the south and east shores of the gulf. By mid-August many of the birds were vocal and were engaging in apparent aerial territorial displays. Dolphin Gulls *Leucophaeus scoresbii* were rare and we encountered them only in the vicinity of cormorant or sea lion roosts, where they fed on scraps or on faecal material.

South American Terns *Sterna hirundinacea* were uncommon in the gulf, although flocks of up to 20 might be encountered. Royal Terns *Thalasseus maximus* breed on the Valdés Peninsula (including Isla de los Pajaros; Ragonese & Piccinini 1972; Figs. 18, 24), but virtually all depart the area in winter; we saw only one bird in 1971 and four in 1972. A few Trudeau's Terns *Sterna trudeaui* were found along the south shore of the gulf in 1972; none were seen in 1971.

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The birds of the Shira Plateau and west slope of Kibo, Kilimanjaro

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INTRODUCTION

This paper is devoted to the birds of the Shira Plateau and the west slope of the Kibo summit of Mount Kilimanjaro, Tanzania. An attempt is made to list all species that have been observed in the area, and to add new information on their distribution, status and habits.

The avifauna of the high altitudes of the south slope of Kilimanjaro has been well studied and documented by a number of observers (Johnston 1886; Oberholser 1905, 1906; Kittenberger 1958, 1959; Moreau 1935, 1944; Moreau & Moreau 1939; Guest & Leedal 1954; Lamprey 1965). However, the high altitudes of west Kilimanjaro have been largely neglected due to their inaccessibility. The only workers to make observations in this area are Swynnerton (1949) and Salt (1954, 1955) from a visit they made in November 1948, and Guest & Leedal (1954) from a visit in August 1953. Neither party spent much time in the area, so their observations were incomplete. In October 1968 the problem of access was alleviated with the completion of a track by the Tanzania Forest Service. This led to extensive exploration and studies of the vegetation and fauna by the staff of the College of African Wildlife Management at Mweka, near Moshi, and by others. This report results from these expeditions.

The Shira Plateau is defined as the relatively level plain on the west shoulder of Kilimanjaro between 11,000 and 12,500 feet contours, an area of about 21 square miles. This is in contrast to the limits of 11,500 and 13,500 feet used by Salt (1955) which are not realistic nor in agreement with modern topographical maps. All of the slope above 12,500 feet and between the Machame Escarpment on the south and the Lent Group on the north is considered the west slope of Kibo.

The Shira Plateau is surrounded on the west and south sides by the Shira Ridge that rises to 13,000 feet. All streams that dissect the area merge and flow away to the north-west. Eccentrically placed in the southern half of the plateau is a large conspicuous cone shaped hill, Platz Kegel.

The dominating vegetation over most of the area from 11,000 to 13,500 feet is heath *Erica*, *Philippia* and *Artemisia* spp., interspersed with grasses *Deschampsia*, *Festuca* and *Pentaschistis* spp., and everlastings *Helichrysum* spp. However, the drainage lines and about 2·5 square miles around the base of Platz Kegel are open grasslands or bogs dominated by sedges, grasses and herbs *Ranunculus*, *Alchemilla* and *Lobelia* spp. Above 13,500 feet West Kibo is largely an alpine desert with few plants except in wet drainages; and above 15,500 feet only barren rock, scree, snow and ice.

This paper results from seven trips to the Shira Plateau and West Kibo between October 1968 and September 1969. All parts of the study area were explored and many parts were visited several times. It was only during trips in July, August and September 1969 that bird specimens were collected. These are now in the Mweka Wildlife College Museum except for six (two *Cisticola hunteri*, one *C. brunnescens*, one *Serinus striolatus*, two *Cercomela sordida*) donated to the British Museum (Natural History). Species of birds that have been recorded in the alpine zone below 11,000 feet are mentioned in a section 'Other species' towards the end of the paper.

I divided the birds into those that were clearly resident in the Shira area and into those that were occasional or rare visitors. Three species, namely Mountain Buzzard *Buteo oreophilus*, Stonechat *Saxicola torquata* and Lammergeyer *Gypaetus barbatus*, listed as residents of high elevations by Lamprey (1965) and Moreau (1944, 1966), are included here only as visitors. My list includes two species, *Apus aequatorialis* and *Cisticola brunnescens*, not previously recorded from upper Kilimanjaro.

All specimens collected were compared with those from other parts of Kilimanjaro that are either in the Mweka Wildlife College Museum, the National Museum of Kenya or the British Museum (Natural History). I have followed the systematics used by White (1960–62, 1961–63, 1965), although among others, Mackworth-Praed & Grant (1960), Blake & Vaurie (1962), Ripley (1964) and Howell *et al.* (1968) were consulted.

RESIDENT SPECIES

Augur Buzzard, *Buteo rufofuscus augur* Rüpp.: Two individuals were seen on almost every trip to the Shira Plateau. This species had also been noted by both Swynnerton (1949) and Guest & Leedal (1954). All sightings were likely of the same two birds as one was of the typical white phase and the other of the melanistic phase. Moreover, they were frequently together. They roam over the entire plateau and ascend West Kibo to at least 14,000 feet. On one occasion I observed the white individual with a rat or mouse. Rodent probably form the bulk of the augur's diet as they are abundant and no resident game birds are known above 10,000 feet.

Swifts, *Apus melba africanus* Temminck and *A. ae. aequatorialis* (von Muller): Large swifts are seen regularly on the south slope of Kilimanjaro to 17,000 feet. Lack (in Moreau 1936) identified swifts he saw at Horombo Hut as *Apus melba* but Kittenberger (1959) those he saw on Kibo as the similar species, *A. aequatorialis*. However, there is no record of a specimen of either species having been collected from high elevations. Sjöstedt (in Friedmann 1930) collected *A. melba* in 1905 above Kibongoto (4,400 feet) on south Kilimanjaro, which is the only specimen of the large swifts from the mountain. On Mount Meru, 40 miles to the west, I collected an individual of *A. aequatorialis* at 8,300 feet. I feel certain that swifts I saw swooping and diving over the Shira Plateau on 7th September were *A, aequatorialis*, as their mottled bellies were clearly visible. In summary, it is probable that both species are resident, although confirmation from specimens is needed. Swifts do not appear to be as numerous in the Shira area as elsewhere on Kilimanjaro, as I saw them only two or three times. Swynnerton (1949) recorded them only once.

Hill Chat, *Cercomela sordida hypospodia* (Shell.): This chat is the most common and widespread bird found on upper Kilimanjaro. It prefers the areas of broken heath and of grassland interspersed with everlastings and low heath which are the common habitats of the Shira Plateau. It is less common in the denser bush below 11,000 feet, that is, the edge of the plateau; and in areas of dense heath on the plateau. It also becomes scarce above 13,500 feet although occurring to the highest vegetation.

I collected four specimens on 3rd–5th July, four on 10th August and two on 6th September. The July birds were not sexed. The August collection was of three males and a female, and the September group of two males. None of the August birds were in breeding condition but the testes of both

September males were greatly enlarged. Moreover, in September the birds were dispersed rather than in the flocks of five to eight that are seen through most of the year.

On 7th September 1969, my companions V. C. Gilbert and M. Bigger discovered a nest at 13,000 feet on a south facing slope of a stream. The nest was a grass cup at the end of a 12-inch deep cleft between two rocks and under a third. It contained two eggs and a newly hatched chick and shell. The eggs were thrush blue (turquoise blue) with small blotches the colour of dried blood on the large end. They were approximately 23 by 17 mm. The only other breeding record I could find for *C. s. hypospodia* is that given by Mackworth-Praed & Grant (1960). They record breeding in June (source not given) and describe the eggs as "white with faint tawny spots and streaks". The eggs found by Gilbert and Bigger are more similar to those of *C. s. ernesti* (Sharpe) of Mount Kenya (Mackworth-Praed & Grant 1960) although it is well known that variation does occur in the eggs of chats.

Hunter's Cisticola, *Cisticola hunteri hunteri* Shell.: This warbler occurs in the heath of Kilimanjaro to about 13,500 feet and is the second most common species on the Shira Plateau. Lynes (1930) and Mackworth-Praed & Grant (1960) say it is normally associated with dense shrubby undergrowth, but on the plateau small flocks of six to ten birds were frequently seen in moorlands with only the sparest of shrubby cover. They associate with the Hill Chat in flocks, and the two species appear to be competing directly for food, that is, insects. At elevations below 11,000 feet, however, the warbler is the dominant species.

I collected 12 specimens at approximately 12,000 feet: three unsexed specimens on 5th July, three males and two females on 10th August, and three males and a female on 6th September. None were in breeding condition. All were similar in size and colour to those in the museums collected above treeline since 1889 (when Hunter made the first collection).

Several authors including Oberholser (1905), Lynes (1930), Moreau & Moreau (1939) and White (1962) noted that specimens of Hunter's Cisticola are more sombre at high elevations than at lower elevations on Kilimanjaro. Specimens from under 9,500 feet have more russet on the head and thighs, and their general coloration is more brown than grey. Moreover, the chin is whitish rather than grey. Specimens I examined from all elevations of Kilimanjaro were darker than specimens from all elevations on Mount Meru, Mount Kenya, the Aberdares and all other localities, although included in the same subspecies, *C. h. hunteri*, by White (1962). Prior to White (1962) specimens from all these localities except Kilimanjaro were called *C. h. prinioides* Neumann (Mackworth-Praed & Grant 1960) because of the colour difference. I also noted that some rectrices of most specimens from upper Kilimanjaro had many conspicuous "feather checks" but were uncommon on specimens from other localities.

White-naped Raven, *Corvus albicollis* Lath.: On all trips to the Shira Plateau two individuals, presumably a pair, were observed. They occasionally ascend the west slope of Kibo to at least 17,000 feet where I saw them flying high over the glaciers. The raven is relatively common over the entire mountain and has been observed as high as the summit of Kibo (19,340 feet) many times.

Scarlet-tufted Malachite Sunbird, *Nectarinia johnstoni johnstoni* Shell.: This sunbird is numerous at high elevations wherever lobelias *Lobelia deckenii* are

in flower. They appear to rely largely on the nectar of lobelia for food—although I have seen individuals pursuing insects—and seem to move about the mountain seeking them. In April 1969, these sunbirds were common in the valleys of West Kibo between 12,500 and 14,000 feet where the lobelias were in flower. In early July lobelias and sunbirds were very common near Platz Kegel but on 10th August only a single individual was seen in the same area. The lobelias had finished flowering and the birds had gone elsewhere in search of food. This is probably why Williams, in July 1949, encountered few of this species on south-east Kilimanjaro (Williams 1951).

One male was collected on 5th July, but the size of the testes was not noted. Its measurements were within the limits given by Williams (1951) for *N. j. johnstoni*.

Yellow-crowned Canary, *Serinus canicollis flavivertex* (Blanf.): This small canary is occasionally seen on the Shira Plateau and the west slope of Kibo to 13,000 feet. It usually occurs in small flocks in the more open heath and grasslands, but as it is a wary bird, it is seldom seen close at hand. On 4th July I saw a male courting a female near giant groundsels *Senecio cottonii* in a valley west of Platz Kegel. As the female moved slowly from limb to limb the male kept approaching with much fluttering of the wings and excited chirping. The female eventually appeared to tire of his pursuit and flew farther away. The male burst into song before I collected him. His testes were greatly enlarged. This single specimen was indistinguishable from a male collected on 10th August at 6,000 feet on west Kilimanjaro. This latter bird was also in breeding condition.

Streaky Seed-eater, *Serinus striolatus* subsp.: Lamprey (1965) says that the Streaky Seed-eater is "A common species which occurs in flocks on the moorlands up to 14,000 feet". I have seen few of this finch on the Shira Plateau or elsewhere on Kilimanjaro, nor is it recorded as being "common" by any other observer. A single individual seen sitting on a giant groundsel 5th July was collected. One of two seen with a flock of Hunter's Cisticolas near Platz Kegel 10th August was also collected. The first specimen was not sexed but the second was a male in non-breeding condition. I cannot find any previous record of this species having been collected above the forest of Kilimanjaro.

The Shira specimens were compared with those in the National Museum of Kenya, British Museum (Natural History) (including eight from lower Kilimanjaro), and Mweka Wildlife College Museum, and were found to differ from all of them. The distinguishing feature of the Shira specimens is a very conspicuous lemon-yellow wash throughout the plumage. This includes the superciliary stripe and the light markings on the sides of the head and underparts from the chin to the vent. The yellow was very noticeable even in the field. Of the large collection of Streaky Seed-eaters in the National Museum of Kenya only three females from Kinankop, Aberdares, have a definite yellowish wash, and this is very light and confined to the underparts. Specimens in the British Museum from the moorlands of Mount Kenya and elevations below 7,000 feet on Kilimanjaro have a slight wash on the head and throat, but none approach the specimens from upper Kilimanjaro for brilliance of colour. The difference may be sufficient for naming of a new subspecies; however, additional specimens are needed. The form that lives on lower Kilimanjaro is somewhat in doubt as White (1963), evidently following Sclater (in Moreau 1935), calls it *S. s. striolatus*, but Howell *et al.*

(1968) use *S. s. affinis*, a name first proposed by Richmond (Oberholser 1905).

With further reference to the Shira specimens, there are two in the British Museum that should be noted. They are a bird collected by Moreau in 1934 in the Mbulu District of northern Tanzania and another from Ruwenzori, both strongly coloured but with orange-buff, not lemon-yellow. C. H. B. Grant marked the label of the Mbulu specimen as juvenile, and the other almost certainly is as well. The Shira specimens may also be juveniles.

OCCASIONAL AND RARE VISITORS

Lammergeyer, *Gypaetus barbatus meridionalis* Keys. & Blas.: This very large bird of prey is rarely seen on Kilimanjaro and its status as a resident is in question (Guest & Leedal 1954). I spent a total of nearly 60 days above the forest between October 1968 and September 1969, and only saw a Lammergeyer once. On 6th November 1968, G. S. Child and I saw an individual circling over the Shira Plateau. I am unaware of any other recent sightings of the species from Kilimanjaro, so it may be worthwhile to note an individual that I saw at 13,000 feet on Mount Meru on 29th September 1968.

Mountain Buzzard, *Buteo oreophilus oreophilus* Hart. & Neum.: Although recorded in large numbers from the upper slopes of Kilimanjaro by Moreau (1935), I have only seen this buzzard on the Shira once. This was on 7th September 1969, when a lone individual flew by in a southerly direction. I have not seen this species above the forest elsewhere on Kilimanjaro, nor does it seem as numerous in the forest as in the same zone on Mount Kenya (pers. obs.).

Quail, *Coturnix coturnix erlangeri* Zedl.: This species was first recorded above the forest of Kilimanjaro by Lamprey (1965). Child saw a single individual near our camp on the Shira Plateau on 3rd July which he duly collected. This bird, a female, was on a very open ridge sparsely covered with grasses and low heath. The ovary was regressed and the crop was filled with unidentified seeds. This bird was likely a stray from large numbers that were seen during the same trip in Londrossi Glade, west Kilimanjaro, at 7,000 feet. On 7th September 1969, I saw two more quails on grassy moorlands near Platz Kegel. It is doubtful that this species is resident and I believe all sightings to be of birds on migration.

The subspecific name *erlangeri* is used, following Benson & Irwin (1966), who applied this name to the populations of eastern Africa, and restricted *C. c. africana* Temminck & Schlegel to those breeding in southern Africa south of the Limpopo.

Plover sp.: Swynnerton (1949) reported sighting a plover in the boggy valley west of Platz Kegel. He believed it was a species of *Stephanibyx*. On 7th September 1969, I saw a large wader in a stream which I was not able to identify positively. However, it definitely was not a *Stephanibyx* sp. as it lacked a black tail band. The bird was *Stephanibyx* in size with white underparts and brownish uppers. Possibly it was a Greenshank *Tringa nebularia* on migration.

African Snipe, *Gallinago nigripennis nigripennis* Bonap.: This wading bird was recorded in November 1948 by Swynnerton (1949) from the boggy area near Platz Kegel. I searched the same area in November 1968 and in July,

August and September 1969, but failed to find more of this species. M. Bigger (pers. comm.) saw an individual in the bog on 17th July 1965, and in January 1970 V. C. Gilbert (pers. comm.) saw two. These sightings suggest snipe are regular visitors to the area.

Owl sp.: An owl or eagle-owl was recorded by Guest & Leedal (1954) near the Lent Group on West Kibo and at the base of Mawenzi Peak.

I have not observed or heard any species of owl or eagle-owl in the Shira area and neither did Swynnerton (1949). However, the presence of a species could be expected as there is a very high rodent population in the area and an eagle-owl *Bubo capensis* is known to reside at high elevations on Mount Kenya. C. W. Benson (pers. comm., Jan. 1970) suggests the bird recorded by Guest & Leedal may have been this species; also, see Benson & Irwin (1967).

Stonechat, *Saxicola torquata axillaris* (Shell.): This chat is common in the heath just above the forest. On 6th September 1969, I observed a lone individual near the centre of the Shira Plateau at 11,700 feet. I have several records and one specimen from the heath at 11,000 feet at the edge of the plateau. However, I believe it is only an occasional visitor out onto the plateau proper, and therefore have not included it in the list of residents above.

Pectoral-patch Cisticola, *Cisticola brunnescens* subsp.: On 7th September 1969, I saw four or five small cisticolas at 11,800 feet on an open moor north of Platz Kegel. I collected two, both females, one of which was taken to the British Museum. There it was tentatively identified by Mrs. B. P. Hall as *Cisticola brunnescens*. Mrs. Hall said (pers. comm., Jan. 1970) the specimen appeared to belong to a population intermediate between *C. b. hindii* Sharpe of Kenya and *C. b. cinnamomea* Reichw. of the south. In the British Museum there is a female from Engare Nairobi (5,400 feet) on the west side of Kilimanjaro, and another female from 6,500 feet on Mount Hanang, having the same characteristics. Mrs. Hall said that three more similar specimens from the Masai Steppe are in Berlin. Lynes (1930), however, included them in *C. b. hindii* without comment. All in all, very little is known about the distribution or habits of these birds and they could represent an as yet undescribed subspecies of *C. brunnescens*. It is also possible that the species is resident on the Shira Plateau grasslands even though not previously recorded. An interesting feature of both specimens was the presence of several toes lacking claws and being swollen at the tips.

Swallow sp.: Two small dark swallows were seen on 5th July flying over the south rim of the plateau. They may have been *Psalidoprocne holomelaena*, which is usually found in the forest belt below 9,000 feet. I have seen swallows above the forest of Kilimanjaro on other occasions and as high as 14,000 feet on Mount Kenya.

Dioch spp.: The remains of two different *Quelea* spp. were recorded by Guest & Leedal (1954) high on Kilimanjaro. One of these was on West Kibo but it is thought that both were accidental casualties during migration. There are no recent records.

OTHER SPECIES

There are a number of species which have not been recorded at high elevations on Mount Kilimanjaro but should be mentioned. These include

species that have been recorded between treeline and 11,000 feet or at high elevations elsewhere in East Africa, particularly Mount Kenya. On 5th–7th July 1969, a Fiscal Shrike *Lanius collaris* was seen several times at 10,500 feet on west Kilimanjaro. At the same locality on 10th August, I collected a Pangani Longclaw *Macronyx aurantiigula*. On Mount Kenya the African Black Duck *Anas sparsa* breeds in the moorlands but has not yet been observed above 8,000 feet on Kilimanjaro. The Mountain Francolin *Francolinus psilolaemus*, which breeds in the moorlands of Mount Kenya, does not occur on Kilimanjaro, but the closely related Shelley's Francolin *F. shelleyi* has been seen up to 10,000 feet (Lamprey 1965). It may go higher. Two residents of the alpine zone of Mount Kenya, the Slender-billed Starling *Onychognathus tenuirostris* and the rarely seen Scarce Swift *Apus myoptilus*, are unknown on Kilimanjaro, possibly because their ranges do not include this mountain. It is perhaps surprising that more birds of prey have not been recorded. At least three harriers *Circus* spp., the Black Kite *Milvus migrans*, and Verreaux's Eagle *Aquila verreauxii* have been observed over the moorlands of the Aberdares or Mount Kenya.

Undoubtedly over the next few years more species will be added to those already recorded in the higher altitudes of Kilimanjaro. Access is steadily improving and now that the mountain has been made into a national park even greater numbers of visitors can be expected. It has been the objective of this paper to bring together all that is known of the bird fauna of upper Kilimanjaro, particularly the less well known western flank, and provide a base for future observers to build on.

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SUMMARY

An account is given of the birds of the Shira Plateau and the west slope of the Kibo summit, upper Kilimanjaro. Data include a breeding record for a chat *Cercomela sordida* and the dependence of a sunbird *Nectarinia johnstoni* on flowering *Lobelia deckenii*. The populations of a seed-eater *Serinus striolatus* and a cisticola *Cisticola hunteri* appear to differ in colour of plumage from those at lower altitudes on the mountain. *Apus aequatorialis* and *Cisticola brunnescens* are recorded from upper Kilimanjaro for the first time, and first specimens of the latter and *Serinus striolatus* were collected.

POSTSCRIPT

C. W. Benson (pers. comm.) suggests that the Chestnut-tailed Pygmy Crake *Sarothrura affinis* could occur on upper Kilimanjaro. It has been collected in the moorland zone of Mount Kenya and the Aberdares between 11,000 and 12,000 feet, and its occurrence to the southward of Kilimanjaro is well established (Keith *et al.*, 1970, *Bull. Amer. Mus. Nat. Hist.* 143(1): 57–59).

The author made another visit to upper Kilimanjaro from 10th to 14th February 1973, in the hope of obtaining more data on the Streaky Seed-eater and Pectoral-patch Cisticola. This was prevented by poor weather; however, good sight records were had of the Alpine Swift *Apus melba* at 16,000 feet and the Abyssinian Nightjar *Caprimulgus poliocephalus* at 10,500 feet. The latter species had not previously been recorded from Kilimanjaro, although known from Mount Kenya and the Aberdares. It was giving a very loud call of pure flute-like notes that sounded like "peeyou" followed by "pee-whuwhuwhu", this latter phrase descending. This call had been heard in 1968–69, but the bird could not be identified, as calling is only heard in the late evening and after dark, and only from the ground or low plants such as *Lobelia*.

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Remarks on the status of *Campethera* "*scriptoricauda*," and related species

by Lester L. Short

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In reviewing the genus *Campethera* as part of my preparation of a monograph of the Picidae, I examined specimens of the superspecies *C. nubica,* including *C. punctuligera, C. nubica, C. bennettii,* and *C.* "*scriptoricauda*". I was able to examine only eleven specimens of the last-mentioned form, but some additional features were found to shed light on the relationships of *scriptoricauda.*

Various authors have recognized the very close relationship of the putative species comprising this complex (see, e.g., Chapin 1939:365; Clancey 1964: 162; Goodwin 1968:21). The allospecies (Amadon 1966) *nubica, bennettii* and *punctuligera* are closely similar and replace each other geographically without overlapping, as far as is known; it is entirely possible that they are conspecific. Compared with these three forms, *scriptoricauda,* allopatric with, and occurring between the ranges of *bennettii* and *nubica,* is less distinctive, and in fact this taxon presents taxonomic difficulty because it combines features of *nubica* and *bennettii*, while lacking characteristics that are not shared by those two forms.

Comparing *scriptoricauda* with *nubica*, similarity is shown in: spotting of the throat (found in *scriptoricauda* and in a few specimens of *nubica*, although 10 of 16 birds from Dire Daoua, Boule Boule, Lake Zwai and Maraco, Ethiopia, have the throat and chin partly, or in 3 cases, fully spotted); streaked ear coverts; and the white background (both sexes) of the ear coverts, and the throat and chin. One possibly distinctive feature of *scriptoricauda* is its yellow-based black bill, but dried specimens of *bennettii* resemble *scriptoricauda* in bill colour (some specimens of *bennettii* bear labels having bill with a "pale base" as do several specimens of *scriptoricauda* at my disposal). Until we know more precisely the variation in bill colour of *bennettii* this trait of *scriptoricauda* cannot be appraised. In wing length and in tail length *scriptoricauda* falls within the upper range of variation of *nubica,* and in the low range (wing to 122 mm, Belcher 1928) of *bennettii.* Resemblances between *scriptoricauda* and *bennettii* are: back coloured yellow-brown (rather than green-brown of *nubica*); back barred with white (rather than spot-barred as *nubica*); tail barring obscure or vague (not crisply barred as in *nubica*); culmen of bill curved (straighter in *nubica*); and, bill narrow across the nostrils. Regarding this last feature, 11 specimens of *scriptoricauda* measure 2·6, 2·6, 2·7, 2·8, 2·8, 2·8, 2·9, 2·9, 2·9, 3·1 and 3·1 mm across the culmen between nostrils; 33 *bennettii* measure from 2·5 to 3·3 mm, and 55 *nubica* measure 3·2 to 4·2 mm. (I note that related *punctuligera* is like *bennettii* and *scriptoricauda,* and not like *nubica* in this measurement). The bill differences between *bennettii* and *nubica* suggest that the latter uses the bill for tapping and excavating in the bark of trees to a greater extent than does *bennettii,* and the resemblance of *scriptoricauda* to *bennettii* in bill structure suggests agreement with it rather than with *nubica* in foraging habits. To these similarities must be added the vocal resemblance of *scriptoricauda* to *bennettii*, as opposed to *nubica* (Benson 1948: 61).

The range of *scriptoricauda* extends from central eastern Tanzania (70 miles north of Morogoro) to the northeastern corner of Mozambique, and thence westward around the southern end of Lake Nyasa to southern Malawi (White 1965; Clancey 1969b; specimen in Los Angeles County Museum). *C. b. bennettii* occurs southwest of the range of *scriptoricauda* in

Mozambique, and northwest of it in northern Malawi and western Tanzania. *C. nubica "pallida"* occurs in northeastern Tanzania, meeting *scriptoricauda* at least sporadically (seasonal wanderers?) at or near Morogoro. No interactions with *C. nubica* have been reported; hybrids of *scriptoricauda* and *nubica* would be very difficult to detect. *C. b. bennettii* and *scriptoricauda* undoubtedly meet in south-central Malawi. Benson (1952: 152) described intermediates of *bennettii* and *scriptoricauda* from: 60 miles north of Tete (type of *C. b. vincenti* Grant & Mackworth-Praed 1953), female, with unspotted, pinkish brown throat and similarly coloured ear coverts; female from Zobue with unspotted, even paler (faintly buffy) throat and ear coverts; females from Kapeni-Matindi, near Blantyre (bird with small throat spots on a beige-tinted background, noted as *scriptoricauda* approaching *bennettii* by Goodwin 1968: 20), and 30 miles south of Chikwawa, all with spots on chin and throat; and males from Zomba, 60 miles north of Tete, and Kapiriuta, all with ear coverts intermediate between the white of *bennettii* and the black-streaked coverts of *scriptoricauda,* but without spots on the throat and chin. Goodwin (1968) commented upon the lack of overlap between phenotypically pure specimens of *bennettii* and *scriptoricauda.* The extent to which hybridization or intergradation occurs is not known, but it is clear that *C. bennettii* morphologically converges upon, rather than diverges from, *scriptoricauda* where their ranges approach. I note that all but three of 11 specimens of *scriptoricauda* I have examined show red-brown colour, like that of *bennettii* in tone (not dark brown as in *nubica*), in a small area of the ear coverts behind and over the eyes; one *male* has this brown colour suffused throughout the anterior ear coverts.

A factor relating to an appraisal of *scriptoricauda* is that the variation found in *C. bennettii* is extensive, as has been documented by Clancey (1964, 1967, 1968, 1969a) and by Irwin & Benson (1966). Particularly notable is the variation in brown throat and ear covert colour among females, and its presence among scattered males from throughout that species' range. Three of nine immature males and five of 20 adult males representing *C. b. bennettii* and *C. b. capricorni* have a light cinnamon brown throat, and generally browner ear coverts. Further, although females show some clinal variation from nearly black (*capricorni*) to pale brown (*bennettii*, "*vincenti*") ear coverts and throat, some *capricorni* specimens are red-brown in those areas, and *bennettii* specimens vary from cinnamon to nearly black. The possibility, even the likelihood, of migration among some populations of *C. bennettii* (Clancey 1964: 164) suggests that there is extensive gene flow, perhaps accounting for some of the observed variation. In any case, variation in colour of the ear coverts and throat in *bennettii*, and of throat spotting in *nubica* indicates genetic instability and plasticity relating to these features. It is unwise to assign crucial importance to them in evaluating the status of *scriptoricauda*. I might note that I fail to see, amid the variation in *C. bennettii,* a need for nomenclatural recognition of more than two subspecies, *bennettii* and *capricorni,* in addition to *scriptoricauda*.

It seems most unlikely that *scriptoricauda,* which does not approach the morphological distinctiveness of *punctuligera, bennettii* and *nubica*, will prove reproductively isolated, and hence specifically distinct from *bennettii*. The resemblance of *scriptoricauda* to *bennettii* in bill structure presumably correlated with feeding habits, their vocal similarity, and their resemblance in general features of plumage colour (back colour and markings, tail pattern) as contrasted with more variable ear-covert and throat-chin patterns, incline

me to agree with Benson (1952: 153), White (1965) and others merging *scriptoricauda* in *bennettii*. Obviously we need further data, especially from areas where the various forms of this complex may meet. At this time, however, although not discounting the possibility that the entire complex may prove to represent a single biological species, the preponderance of available evidence suggests that *scriptoricauda* is conspecific with *bennettii*. *C. punctuligera* may prove conspecific with *C. bennettii*, which it resembles in bill structure, and *C. nubica*, the most distinctive of these forms, is most apt to prove specifically distinct from the others. For the time being I prefer to treat *punctuligera*, *bennettii* and *nubica* as separate species, listed in that linear order.

As a final comment I suggest that *C. abingoni* (and related *C. notata*) may have played a role in the evolution of the *C. nubica* complex. I believe *abingoni* and *notata* are closely related to the *nubica* group. They are broader billed, and generally perform more tapping than do species of the *nubica* complex. The essential point is that broad-billed *C. abingoni* overlaps in range with narrow-billed *C. bennettii* and *punctuligera*, but is essentially allopatric with *C. nubica*, which has a relatively broad bill (morphologically overlapping somewhat with *abingoni*). Thus competitive interaction with *abingoni* may be a factor influencing the narrow bill and feeding habits (e.g., ground feeding has been reported for *bennettii* and *punctuligera*, but not for *nubica*) of *punctuligera* and *bennettii*, whereas *nubica* ecologically may replace both the strong-billed *abingoni* and its own allospecies *punctuligera* and *bennettii*.

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Summary: Campethera "scriptoricauda" is found to agree with *C. bennettii* and not *nubica* in bill shape and bill width, and in several colour characters, as well as in voice and habits, as noted by other authors. It is treated herein as a race of *C. bennettii*. The three woodpeckers *C. bennettii*, *C. punctuligera* and *C. nubica* are very closely related, forming a superspecies. Competition with another relative, *C. abingoni*, with which they are sympatric, may have caused divergence of *C. bennettii* and *punctuligera* from *C. nubica*, which is largely or completely allopatric with those three species.

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The Relationships of the Swallow-tanager *Tersina viridis*

by Charles G. Sibley

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INTRODUCTION

The Swallow-tanager occurs in tropical and lower subtropical areas from Panama and Trinidad to Bolivia, southeastern Brazil, and northeastern Argentina. It is a nine-primaried oscine bird with a relatively broad, flat bill and long swallow-like wings. The adult male is mainly iridescent bluish or bluish-green with the facial area, throat and flank bars black and the abdomen white. The female is green with the face and throat greyish-brown and the abdomen and flank bars pale yellow-green. Swallow-tanagers are territorial when breeding but gregarious otherwise. They eat fruit and insects taken in flight. The nest is built in a hole, sometimes excavated by the birds in a vertical bank. Like many hole-nesting birds the eggs are pure white (Schaefer 1953).

TAXONOMIC HISTORY AND CHARACTERS

The Swallow-tanager came to the attention of ornithologists early in the last century and was at first assigned to the swallows because of the long wings and broad bill. During the 19th century the Swallow-tanager was placed in several different genera, most often in *Procnias*. This generic name was later shown to belong to the bellbirds of the family Cotingidae (Ridgway 1907: 880) and since 1907 the Swallow-tanager has usually been placed in *Tersina* of Vieillot (1819).

It was recognized quite early in its taxonomic history that *Tersina* is related to the tanagers. For example, Sclater (1862) placed it in its own subfamily (Procniatinae) in the tanager family "Tanagridae" (=Thraupidae). In 1895 Ridgway proposed the establishment of the family Procniatidae based upon "the notable characters presented in the skull" which had been called to his attention by F. A. Lucas. Lucas (1895a) published a brief note announcing Ridgway's new family and (1895b) a description of the "characters of the Procniatidae."

Lucas (1895b) found that *Tersina* is like the tanagers in many characters but that in its palatal skeleton it "departs so widely, not only from the tanagers, but from the large majority of passerine birds, as to warrant the establishment of a separate family for . . . the genus." The palatal differences involve "the total absence of the transpalatine processes, the small size of the interpalatines, and the slenderness and outward curvature of the prepalatine bars, which makes the interpalatine vacuity almost oval in shape." Lucas noted that the absence of the transpalatine process was unique among the passerines although found in *Thinocorus* and *Turnix*. Except for the palate, the skull of *Tersina* was found by Lucas to be more like that of a tanager than like that of a swallow. In its pterylosis *Tersina* was found to be either distinctive or similar to the tanagers. The shape of the dorsal tract in *Tersina* resembles that of *Thraupis palmarum* although differing in size.

In a study of the hyoidean structures in passerine birds George (1962) found that, with two exceptions, the New World nine-primaried oscines have a laterally compressed basihyale. In *Peucedramus* and *Tersina* this bone is cylindrical in shape. George therefore excluded the Tersinidae from the nine-primaried assemblage although the Thraupidae were included.

Since 1895 *Tersina* has been allocated to a monotypic family by many authors including Wetmore (1930, 1960), Stresemann (1934), Hellmayr

(1936) and George (1962). Mayr & Amadon (1951) recognized the family Tersinidae "for the present," thus expressing uncertainty about the status of the genus. Some authors have placed *Tersina* in a monotypic subfamily, Tersininae (Mayr & Greenway 1956; Storer 1970) and others have depressed it to a tribe, Tersinini (Beecher 1953), or to the level of a genus within the tribe Thraupini (Sibley 1970).

The basis for recognition of a monotypic family, subfamily or tribe for *Tersina* is that it is so different in its palatal structure from the typical tanagers that it must be segregated from them. The counter argument emphasizes the many similarities between *Tersina* and other tanagers and explains the palatal and hyoideal differences as special adaptations associated with its swallow-like method of capturing insects in flight. It should be noted that the swallows (Hirundinidae) are one of the many groups of passerines which have a cylindrical basihyale (George 1962:6). Thus convergence is a reasonable explanation for the condition in *Tersina*. The tongue of *Tersina* was noted by Lucas (1895b) as "hirundine in pattern" and the same type of tongue "occurs among the swifts, and . . . probably . . . in other insectivorous birds . . ." The similarities between *Tersina* and the typical tanagers involve all characters other than those noted as differences. Lucas (1895b) pointed out that the jaw, the nares and the ectethmoid are tanager-like. Lucas noted that "the skull, in spite of its superficial resemblance to that of a swallow, is structurally more nearly like that of such a typical tanager as *Piranga erythromelas* . . ." Beecher (1953:310) considered *Tersina* to be "anatomically close to *Calospiza*" [=*Tangara*] and Storer (1969) suggested that *Tersina* "may . . . have been derived from a calliste-like ancestor." He further noted that "the color and texture of the feathers are like those found in some callistes, and the sexual dimorphism (blue males and green females) is like that in the Blue Dacnis. The Swallow Tanager's bill is rather like that of a calliste but much broader at the gape, a reflection of its fly-catching habits. Like the callistes, Swallow Tanagers may also drift through the canopy of the forest in groups, feeding on small fruits." The "callistes" are currently placed in *Tangara* which is a synonym of *Calospiza*.

THE EGG WHITE PROTEIN EVIDENCE

In a study of the egg white proteins of passerine birds using starch gel electrophoresis (Sibley 1970) I found that the pattern of *Tersina* was like that of the tanagers and other members of the New World nine-primaried assemblage. All of the members of this group were alike and it was not possible to assess degrees of similarity and difference among them. Recently the egg white proteins of *Tersina* have been compared with those of many other passerines using the electrophoretic technique of isoelectric focusing in acrylamide gel (abbreviated IFAG). The IFAG method has been described by Sibley & Frelin (1972) and used in other studies by Sibley & Ahlquist (1973) and Sibley (1973).

The greater resolving power of the IFAG technique permits detailed comparisons of the isoelectric properties of homologous proteins in related species. In the present study, using a pH 6-4 gradient, it was possible to resolve at least 12 protein bands in the egg white of *Tersina* and other species in the New World nine-primaried assemblage. The same basic pattern is found in *Tersina* and in the more than 50 species of tanagers, wood warblers, emberizine buntings and troupials that have been examined. Differences among these species take the form of shifts in the isoelectric points and

relative amounts of homologous proteins. Homologies are easily determined because the overall patterns are so similar.

After preliminary comparisons had shown that *Tersina* was a member of the New World nine-primaried assemblage its egg white proteins were compared in detail with those of the following species:

Tanagers (Thraupini): *Thraupis episcopus, Thraupis sayaca, Euphonia luteicapilla, Piranga olivacea* and *Eucometis penicillata.*

Wood-warblers (Parulini): *Dendroica pensylvanica, Dendroica petechia, Geothlypis trichas* and *Myioborus miniatus.*

Honey-creepers (Coerebini): *Coereba flaveola.*

Buntings (Emberizini): *Emberiza cirlus, Diuca diuca, Zonotrichia capensis* and *Geospiza fortis.*

Cardinal grosbeaks (Cardinalini): *Pheucticus ludovicianus, Passerina cyanea, Saltator maximus.*

Cardueline finches (Carduelini): *Acanthis flammea.*

Troupials (Icterinae): *Xanthopsar flavus.*

The pH 6-4 IFAG pattern of *Tersina* egg white contains 12 protein bands. All are identical in position and relative quantity to their homologs in *Thraupis episcopus, Thraupis sayaca, Piranga olivacea, Euphonia luteicapilla* and *Coereba flaveola.* The pattern of *Eucometis penicillata* differs slightly from that of these species in the positions of two bands. The patterns of the species of *Dendroica* and *Geothlypis* are identical to one another but that of *Myioborus* differs slightly in the position of one band. This difference makes *Myioborus* virtually identical to *Tersina* and the genera which are identical to *Tersina.* This suggests that these small differences are not consistent within recognized groups and this is further indicated by most of the remaining species. The patterns of the emberizine, cardinaline and icterine species are identical or nearly identical to those of the tanagers, *Tersina,* etc. and I am not able to find consistent differences correlated with currently recognized higher taxa. The carduelines may differ enough to be separable from the emberizines etc. but I cannot be certain that the observed differences will prove to be consistent when many more species are compared.

What does seem clear is that closely related species do have identical patterns. Within some genera there are small differences between species, but it is far more common to find agreement between congeners to the finest detail.

I interpret the evidence from all sources as indicating that *Tersina* is a tanager and that its specialized characters are adaptations to its method of feeding. There is no basis for taxonomic separation beyond the generic level and the closest relatives of *Tersina* are probably *Thraupis* and *Tangara.*

DISCUSSION

Although the close relationship between *Tersina* and other tanagers may be accepted by most avian systematists the more basic problem remains, namely, the true generic alignments within the New World nine-primaried oscines. I have discussed this question elsewhere (Sibley 1970: 106–108) and Storer (1969) and Paynter & Storer (1970) also have commented upon it. Briefly, the problem is as follows.

The groups herein recognized as forming the New World nine-primaried assemblage (tanagers, wood-warblers, honey-creepers, buntings, cardinal grosbeaks, troupials) are based primarily upon differences in the feeding structures. For most of the groups bill shape is the most important defining character. That all of these groups are closely related seems clear but whether

or not all "tanagers" are more closely related to other "tanagers" than to some "wood-warblers" or "honey-creepers" is debatable.

Some steps toward a re-alignment of genera have been attempted. Beecher (1951) suggested that the Coerebidae is a composite of nectar-feeding warblers and tanagers and proposed that *Coereba, Ateleodacnis* and *Conirostrum* should be placed in the Parulidae and that the other "coerebid" genera should be transferred to the Thraupidae. Skutch (1954:438; 1962) and de Schauensee (1966:454) disagreed. Skutch (1962:113-116) argued that *Coereba* is so distinct that it merits separation in a monotypic family and that *Conirostrum* may be an emberizine. Lowery & Monroe (1968) adopted a neutral position by placing *Coereba* and *Conirostrum* among a group of "Genera Incertae Sedis" following the Parulidae.

Storer (1969) pointed out that the "pattern, color, and texture of plumage offer many clues to relationships" and suggested that close relatives, in some cases, have been placed in different "families". That this suggestion is correct has been proved by the hybrids between the "coerebid" *Cyanerpes cyaneus* and the "thraupid" *Tangara nigrocincta* reported by Delacour (1972a, b). Delacour (1972a) also expressed his conviction that the "members of the Sugar-bird family (Coerebidae) with the exception of those of the genus *Coereba,* really are tanagers (Thraupidae)."

Although these debates have not solved any major problems they have helped to define them and to make it clear that the present classification is not a true reflection of natural relationships. The solution must be sought in evidence which is unrelated to food habits because all characters associated with feeding can be expected to reflect trophic adaptations and will thus merely confirm the present arrangement rather than test its validity. The procedure must involve a search for nearest relatives, mainly at the generic level, without regard for the boundaries of currently recognized higher taxa. The present study of *Tersina* is a step in this direction but many more difficult questions remain unsolved. The IFAG patterns of the egg white proteins seem likely to be helpful in identifying closely related taxa but material from many more species must be obtained before such data will become significant.

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On the taxonomic status of the genus *Sauropatis* Cabanis & Heine (family Alcedinidae)

by A. K. Mukherjee & J. M. Dasgupta

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The genus *Halcyon* was described by Swainson (1821: text to pl. 27) with *Alcedo senegalensis* Linnaeus as its type. His description of the genus is as follows:—"Bill very long, straight, thick, the base broader than high; the sides tetragonal: upper mandible very straight, the base rounded; under mandible beneath carinated and recurved, the margins covered by those of the upper. Nostrils basal, covered by a membrane, the aperture naked, linear and oblique. Tail mostly moderate. Feet gressorial: interior fore-toe small or wanting."

Cabanis & Heine (1860) erected the genus *Sauropatis* with *Halcyon sanctus* Vigors & Horsfield as its type-species. This species was distinguished from *Halcyon senegalensis* (Linnaeus) by its short and broad bill, the lower mandible being much more curved upwards and the bill being black and not red.

Sharpe (1868) pointed out that the genus *Halcyon* had earlier been divided into many genera by different workers, but those differences were merely those of "Style of plumage and not those of forms". He, therefore, synonymized *Sauropatis* with *Halycon* which is represented in the Ethiopian, Indian and Australian Regions and parts of the Palaearctic Region. In this genus, he included as many as 36 species of which four belonged to the Indian Region,

namely, *Halcyon coromanda*, *Halcyon smyrnensis*, *Halcyon pileata* and *Halcyon chloris*.

Blanford (1895: 135–137), Mathews (1912: 108–109), Oberholser (1919) and Baker (1927: 274–278) have advocated the segregation of *Sauropatis* Cabanis & Heine from *Halcyon* Swainson, while Sharpe (1870), Biswas (1953: 32), Smythies (1953: 345–352), Peters (1945: 207–209) and Ripley (1961: 220–221) have synonymized *Sauropatis* with *Halcyon*.

Except Sharpe (1868), however, none of the above-mentioned authors has assigned any reason for his action.

From an examination of type-species of the genera *Halcyon* and *Sauropatis*, we find the following differences:

	Halcyon	*Sauropatis*
1.	Bill rather large, broad at base; culmen straight, rounded above.	Bill short, broad; lower mandible much curved upwards.
2.	Bill generally red.	Bill all black or nearly so.
3.	1st (outermost) primary half the length of the 2nd; 3rd primary being the longest.	1st (outermost) primary subequal to the 2nd; 3rd primary almost equal to the 2nd.
4.	1st (outermost) primary shorter than 5th and 6th primaries.	1st (outermost) primary longer than 5th and 6th primaries.
5.	A white wing-patch invariably present on the bases of the primaries, except in *Halcyon coromanda*.	White wing-patch absent.
6.	Inhabits inland pools, fresh-water rivers and estuaries.	Inhabits mostly coastal regions and sometimes estuaries.
7.	Nests are made in tunnels on river banks, and sometimes in holes of tree-trunks near rivers.	Nests are made generally in termite mounds or in clay nests of ants.
8.	Clutch-size varies from 2 to 6, but generally more than 3.	Clutch-size generally 3.

Ali & Ripley (1970: 95–99), while giving the description of the genus *Halcyon*, remarked that "In one species *chloris*, lower mandible is much more curved upwards". We find that this character is not only confined to *chloris* but also to another species, namely, *sancta*. These species are not only distinguishable from other species of *Halcyon* on morphological characters but they also have different habits, such as in nesting, habitat preferences, feeding, etc. Hence, there is ample justification to group them (*chloris*, *sancta*) in a genus separate from other representatives of *Halcyon*. We would, therefore, resuscitate the genus *Sauropatis* Cabanis & Heine to accommodate these two species.

The genus *Sauropatis* is more or less limited to the humid tropical coasts of south-eastern India, Malaysia, Polynesia and Australasia.

We are indebted to the authorities of the American Museum of Natural History, New York, for the loan of some specimens for our study. We are thankful to the Director, Zoological Survey of India, for extending facilities for the present work, and to Dr. B. Biswas, for critically reading through the manuscript and suggesting improvements.

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Ortolan and Blue Rock Thrush in Sierra Leone

by G. D. Field

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Few records of wintering Ortolans *Emberiza hortulana* are available from West Africa and Moreau (1972) only notes "a few . . . found wintering in Nigeria south to about 9° 50′ N." and a double passage on the lower Senegal River. In the first week of January 1973 on an expedition to the Loma Mountains in N.E. Sierra Leone, 9° 13′ N. and 11° 06′ W., I found the species plentiful on the steep south-east face of Bintimane, the highest point of the mountains. On this side the gallery forest ends at approximately 1,000 ft. below the summit, 6,390 ft., and the 600 or so feet above the forest consists partly of precipitous slabs of bare rock, partly of steep grass and herb covered slopes, interspersed with large boulders and a few scattered trees. By January the whole slope had been burned except for some moister folds where tiny springs still flowed. The buntings could be found over the whole of this slope but not on the gentler bare ground above leading to the summit. They were in company with the pipits, *Anthus trivialis* and *A. similis,* both very common, and to a lesser extent with the native bunting *Emberiza tahapisi,* spending most of their time on the ground but perching freely on the burnt herb stems and occasionally in trees. Plumage was very variable, ranging from bright, clear yellow and cinnamon-rufous underparts to drab whitish with pale pinkish bellies, while some had rather heavily streaked breasts. They were present throughout the five days of my stay and were not seen outside the one area. Though I once had six together on or beside one small burnt bush they did not normally flock closely and, assuming an even spread over the slope, I should tentatively put the population somewhere about fifty individuals.

Until recently records of the Blue Rock Thrush *Monticola solitarius* were almost equally scanty for West Africa south of the Sahara, but it has now been reported from Gambia (McGregor & Thomson 1965), northern and southern Nigeria, Senegal and Mt. Nimba in Liberia (Moreau 1972). In early December 1965 I noted at least three individuals on the summit slopes, above 5,500 ft., of the Tingi Mountains, thirty miles south-west of the Lomas and very similar in formation and vegetation. At the time I was not sure whether this was a genuine wintering ground or merely a freak occurrence. However, the original sighting is confirmed by its presence in the Lomas on the same slope as the Ortolans and right up to the summit. Birds were seen on several occasions and five individuals noted on one morning, making it here more common than *M. saxatilis*, though the latter also occurs on the plateau below the summit slope and along the edges of the galleries. Where the two occurred together *M. saxatilis* was once noted chasing *M. solitarius* from a

favourite boulder. Taken together, these two records suggest that *M. solitarius* regularly winters in Sierra Leone in small numbers in the available areas above 5,000 ft.

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The migratory movements of the Pygmy Kingfisher *Ceyx picta natalensis* in the Republic of Zaire

by A. Prigogine

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It is some years since various authors, especially Benson (1964: 57–60), have shown that the southern form of the Pygmy Kingfisher *Ceyx picta* (Boddaert), namely *C. p. natalensis* (Smith), has migratory movements, while recently Clancey (1972) has drawn attention to some off-season records of this form from the Bwamba Forest, extreme western Uganda. Moreau (1966: 243) cites *C. picta* among intra-African migrants. On the other hand, it is curious that Mackworth-Praed & Grant (1970: 424) make no mention of any movement in *C. p. natalensis*. With few exceptions *natalensis* occurs in Zambia, Malawi and Rhodesia, and in territories to the southward, from September to March (Benson 1964: 58). Breeding takes place in Zambia, Malawi and Rhodesia in the same period, with a peak of egg-laying in November (Benson 1963: 632; Benson *et al.* 1964: 59). Benson (1964: 59) also demonstrated that these southern populations of *natalensis* migrate northward, particularly to north-eastern Zaire (Kivu), Rwanda, Uganda and Kenya (see also Clancey 1972, who makes no mention of Benson's data). The northernmost record which Benson gives is from Lake Albert, between Hoima and Bugoma, since when I have even found it at Paulis (Isiro), in the Upper Uele at 2° 53′ N., 27° 58′ E.

If the status of *natalensis* is well established in Zambia and in other countries to the southward, the situation is on the other hand much less clear in Zaire. This is because in certain parts of Zaire *natalensis* appears only in a determinate period, to occur at this time alongside a population of *C. p. picta* which is resident throughout the year. So the presence of *natalensis* can remain unperceived, and as I have already noted myself many specimens of *natalensis* have been confused with *picta* or *vice versa*.

In the first place, it must be remembered that in the southern part of Zaire there exists a population of *natalensis* which seems to have exactly the same rhythm as that in Zambia (Benson *et al.* 1971: 156). Böhm had already collected this form in the Katanga, near the Rivers Dikulwe and Lufira, but his specimens were recorded by Schalow (1886: 421, 432) and Matschie (1887: 151) merely as *Ispidina picta*. Chapin (1939: 286) has cited *natalensis* from the Katanga, but was unable to examine personally any specimens from this part of Zaire, while the record by Neave (1910: 109) listed is in reality from Zambia. Subsequently Verheyen (1947: 4) has recorded *natalensis* from Musosa (collector H. J. Bredo), without giving the date of collection; actually the specimen is a female collected some time in the period September/November. Schouteden (1951: 30–32) has given all the localities in Zaire, Rwanda and Burundi in which the form *natalensis* has been collected, and has mentioned in addition Albertville, in the northern Katanga.

Verheyen (1953: 347) was the first to note dates of collection, of five specimens from the Upemba National Park. They fall within the period late August to mid-April (the specimen shown as dated 27th November is actually labelled 27th August). It seemed to Verheyen that "l'espèce est sujette à des migrations (locales?)". He estimated that breeding was in January/February, according to the age of birds examined and the state of their plumage. Later, Schouteden (1965: 37) cited all the specimens emanating from Dilolo and Kolwezi under the name *Ispidina picta,* and recorded their dates of collection as falling between mid-August and the beginning of February. Finally, Schouteden (1971: 92) summarised all the specimens collected in the Katanga as a whole as coming within the period 9th August and the end of March. So, in summary, in the Katanga the situation for *natalensis* corresponds well with that described for Zambia. The birds arrive in August, breed and then disappear, the latest most often in March, as we shall see in detail below.

What happens to the *natalensis* of this population in the ensuing period? It is not possible to distinguish these birds from those of other populations nesting to the southward, and they must be considered together. The information in the literature concerning *natalensis* collected outside the breeding range is extremely fragmentary. The first to have recorded *natalensis* only a little to the south of the equator is without doubt Gyldenstolpe (1924: 276), who mentions a female collected near Lake Chahafi, Uganda. Chapin (1939: 286) in turn noted that in the museum at Tervuren there were several *natalensis* from Kisenyi, the vicinity of Lake Kivu and the Rutshuru Plain. Schouteden (1942: 334) recorded the collection of a female of *natalensis* at Kirinda, Rwanda on 25th August, although personally I attribute it to the nominate form. Schouteden (1951: 30–32) recorded several further specimens from Kivu, at Kalembelembe, and from Rwanda/Burundi, at Kisenyi and Rugegera, but did not give collecting dates. It can also be noted that Aurélien (1957: 206), in describing *Ispidina picta* from Rwanda, writes that "les auriculaires portent une tache bleue". This description corresponds with *natalensis,* which would accordingly appear to be common enough in Rwanda and Burundi (actually Aurélien sent only two specimens of *natalensis* to Tervuren).

Some specimens from Zaire, Rwanda and Uganda have been recorded by Benson (1964: 59, 66), in particular from Kivu, at Lwiro; from Rwanda, on the River Kagera, and at Gisagara and Kisenyi; and from extreme western Uganda, in the Bwamba Forest (and see also Clancey 1972). Subsequently to Benson, Schouteden has given a list of specimens of *Ispidina picta* in the collections at Tervuren, from Rwanda (1966a: 57), Burundi (1966b: 39) and Kivu (1968: 120), but did not separate the forms *picta* and *natalensis.*

For this reason, in order to clarify the occurrence of *natalensis* in Zaire and adjacent territories to the east, I have examined all the specimens of *C. picta,* totalling more than 600, in the collections of the Musée royal de l'Afrique Centrale, Tervuren and in the Institut royal des Sciences Naturelles, Bruxelles. I have also taken note of a certain number of specimens recorded in the literature, in each such case expressly indicating this. In all, exclusive of the 10 recorded by Clancey (1972) from the Bwamba Forest, I have been able to bring to light 91 specimens of *natalensis,* six of them without date of collection. Eighty-five of them appear in Table 1, which shows their monthly distribution for the different regions considered. The Map indicates the position of the localities where *natalensis* has been collected, and the

corresponding season of the year. Finally, in Table 2, I have drawn up a list of all the specimens of *natalensis* which form the basis of this study.

TABLE 1

Distribution of specimens of *Ceyx picta natalensis* by months (exclusive of ten recorded by Clancey 1972 from Bwamba, Uganda between 25th April and 19th July).

	J	*F*	*M*	*A*	*M*	*J*	*Jl*	*A*	*S*	*O*	*N*	*D*	*Total*
Southern Katanga (a)	3	6	4	2	1			2	8	10	6	5	47
Northern Katanga				1				1					2
Kasai				1	1		1						3
Lake Leopold II								1					1
Lower Congo					1								1
Maniema				1			1	1					3
Southern Kivu (b)				1	1		1						3
Burundi			1(c)										1
Rwanda (b)					2		2				1(d)		5
Idjwi Island							2	4					6
Northern Kivu & Uganda (b)		1(e)			2	3	2	3	1(f)				12
Upper Uele			1(g)										1
TOTAL (without southern Katanga)		1	2	4	7	3	9	10	1		1		38

(a) Includes two specimens collected by Böhm.
(b) Includes specimens cited by Benson (1964: 59) from Lwiro, Kagera and Bwamba.
(c) Collected at Bujumbura 1st March, wing 55 mm; a second specimen from Bujumbura, undated, has wing 50·5 mm only, but there is a well developed patch of blue on the ear-coverts.
(d) Collected at Kisenyi in Nov., wing 55·5 mm; but in poor condition, blue on ear-coverts little visible.
(e) Collected near Lake Chahafi 6th Feb.; wing 54 mm.
(f) Collected by Grauer at Beni in Sept. (Sassi 1912: 365).
(g) Collected at Paulis (Isiro) 19th March; wing 55 mm.

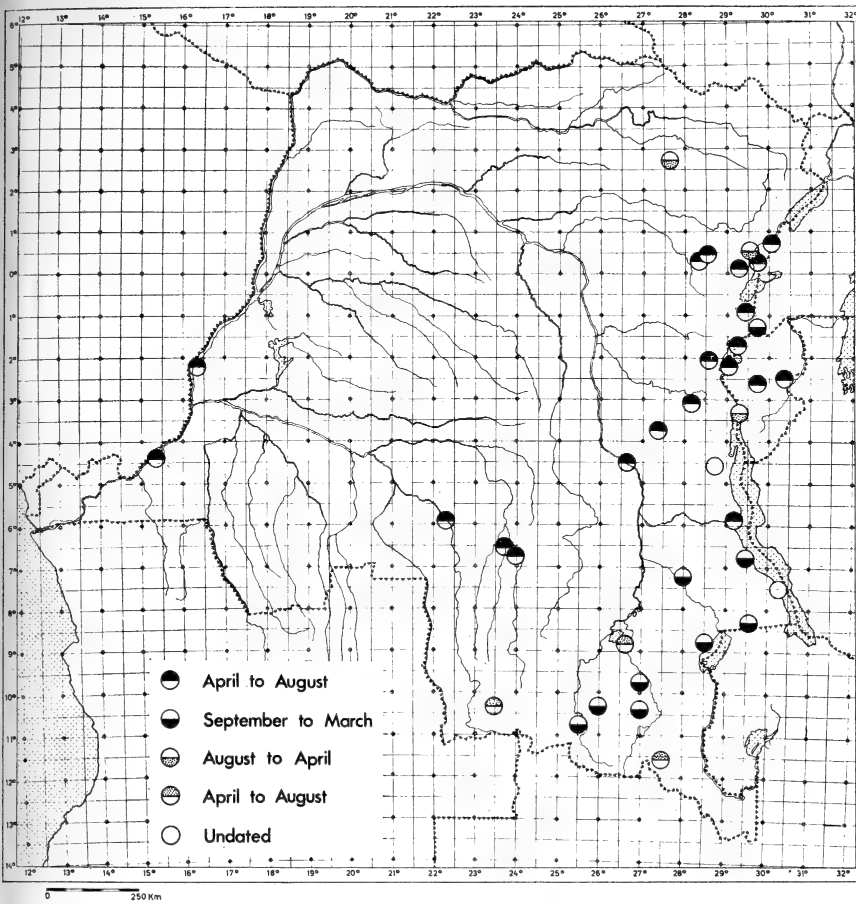
TABLE 2

List of specimens examined or cited from Zaire, Rwanda, Burundi and western Uganda (a)

A. *Southern Katanga:* 1 Bunkeya 20. II; 1 Buvumba (river) 23. IX; [1 Dikulwe (river) 25.XI]; 1 Kansenia 11.III; 25 Kasaji 16.VIII/9.II; 2 Kasapa V, IX; 1 Kiambi 5.XII; 2 Kipopo 31.III, 28.IV; 1 Kiswishi 15.X; 2 Kolwezi 20.III, 27.XII; [1 Lufira (river) 10.X]; 1 Lupando 14.IX; 1 Mpala 19.X; 1 Musosa IX-XI; 1 Mweru (lake) 23.I; 1 Tanganyika (lake) undated (b); 5 Upemba Nat. Park 27.VIII/15.IV.

B. *Outside southern Katanga:*
Northern Katanga: 2 Albertville 24.IV, 9.VIII.
Kasai: 1 Gandajika 16.IV; 1 Kasanza 2.V; 1 Luluabourg 2.VII.
Lake Leopold II: 1 Bokalakela 25.VIII.
Lower Congo: 1 Kinshasa 4.V.
Maniema: 1 Kalembelembe undated; 2 Kampene 2.VII, 14.VIII; 1 Kasongo 8.IV.
Southern Kivu: 1 Hombo 25.V; 1 Kamituga 28.IV; 1 Lwiro 4.VII (c).
Burundi: 2 Bujumbura 1.III, undated.
Rwanda: 2 Astrida undated; 1 Gisagara 7.V; 1 Kagera 27.VII (c); 3 Kisenyi VII, XI, undated; 1 Rugegera 5.V.
Idjwi Island: 6 Idjwi 9.VII/24.VIII.
Northern Kivu: 1 Beni IX; 1 Butembo 15.VI; 1 Etaetu 21.V; 1 Etembo VI; 2 Mutsora 11.VIII, 27.VIII; 1 Mutwanga 22.V; 1 Rutshuru (plain) VI.
Uganda (near frontier with Zaire) (d): 1 Bwamba (forest) 3.VIII; [2 Bwamba (forest) 11.VII, 20.VII]; 1 Chahafi (lake) 6.II.
Upper Uele: 1 Paulis (Isiro) 19.III.

(a) Specimens cited, not examined by myself, are shown in brackets. Not included are 10 specimens from the Bwamba Forest, western Uganda, collected between 25th April and 19th July (Clancey 1972).
(b) Specimen collected in 1883 by Storms.
(c) Examined by Mrs. R. T. Chapin (previously cited by Benson 1964: 59).
(d) See also second sentence under (a).



Distribution of specimens of *Ceyx picta natalensis* by months.

If we consider in the first instance the southern Katanga, 42 out of 47 specimens were collected between September and March. There are two for August (16th August, Kasaji; 27th August, Upemba National Park). On the other hand, two were still present in April (15th April, Upemba National Park; 28th April, Kipopo), and one even in May (Kasapa, near Lubumbashi, without indication of day of collection). So it can be admitted that *natalensis* is present from September to March, but that some individuals arrive as early as mid-August and the last leave in April/May. The situation thus agrees well with that shown by Benson (1964: 58) for Zambia, etc.

Apart from the southern Katanga, I have been able to take count of a total of 38 specimens of which 33 fall within the period April/August, exactly the period when *natalensis* is almost completely absent from the southern Katanga. Furthermore, these figures are exclusive of ten specimens of *natalensis* mist-netted in the Bwamba Forest, Uganda between 25th April and 19th July, reported on by Clancey (1972), for which the exact dates within this period are not indicated.

In the northern Katanga, the dates of two specimens collected at Albertville seem to correspond respectively with northward and southward passages—24th April and 9th August. There are records of *natalensis* from the Kasai and even along the River Congo in the districts of the Lower Congo and Lake Leopold II.

But it is above all in the eastern part of Zaire and adjacent Uganda that *natalensis* seems to make the longest movements as already indicated by Benson (1964: 59) and recently by Clancey (1972). In fact *natalensis* has been collected in Maniema, in different parts of Kivu, on Idjwi Island (specimens from this locality had previously been confused with nominate *picta* in Prigogine 1967: 260), in Rwanda and Burundi, just across the Zaire border in the Bwamba Forest, Uganda, and in the Upper Uele.

The female collected on 6th February near Lake Chahafi, Uganda and the male on 1st March at Bujumbura, Burundi represent exceptionally advanced dates. On the other hand, the latest specimens of *natalensis* have been collected at the end of August (24th August on Idjwi Island; 27th August at Mutsora, northern Kivu). But an isolated specimen has been collected in November, without indication of the day of collection, at Kisenyi, Rwanda. It is not possible to say, in the case of specimens collected outside the period April/August, whether it is a question of migrants, or of *natalensis* remaining in their winter quarters.

In the migratory period, *natalensis* does not seem to have a preference for any particular biotope. On the one hand, specimens have been collected in open habitats as for example at Bujumbura, Kisenyi and on the Rutshuru Plain. On the other, they have also been found in heavy forest as at Bwamba, Hombo, Etaetu and Etembo.

The stay of *natalensis* in its winter quarters corresponds with sexual inactivity. Let us examine, then, the breeding period of nominate *picta*. According to Chapin (1939: 286) nesting near the equator may continue throughout the year, but further to the north it probably takes place from March to May or June, while to the south Chapin expected it to commence at the start of the rains (that is to say, in September/October). According to Traylor (1963: 92), the female and three eggs collected in March at Calulo, in Angola at 10° S. (Lynes & Sclater 1934: 38), belong to nominate *picta*.

Around Kamituga, at ca. 3° S., I found a nest with three eggs on 25th October (Prigogine 1961:253) and another with four eggs on 29th August (Prigogine 1972: 207). Based on all my records from this region, including also those of young, I conclude that breeding is from August to October and from January to March, in fact probably the whole period mid-August to March (Prigogine 1971: 70). It would seem that, when *natalensis* is present in this region, from April to August, and is found alongside the nominate form, there is no reproductive activity, and this would favour the segregation of the two forms. But, as we shall see, this does not seem to be the case everywhere, particularly in the southern part of Zaire and further southward.

In principal, the integration between *natalensis* and *picta* could take place in regions where *natalensis* breeds but where there exists also a resident population of nominate *picta* nesting at the same season, as in Angola commencing at the start of the rains (Traylor, 1963: 92, also gives a record of a juvenile nominate *picta* from Dundo for as early as August). White (1965: 226) records "some integration" in the Kasai, but in the collection at Tervuren there is no specimen from the Kasai showing characters intermediate between *natalensis* and nominate *picta*.

On the other hand, Benson (1964: 60) records a male from Vila Texeira de Sousa, Angola which seems intermediate. In general, such specimens could occur in a belt, where *natalensis* and *picta* could be in contact, during the breeding season of *natalensis* and which would traverse Africa in the vicinity of 11° S. in Angola and 5° S. in Tanzania. It is difficult to trace such a band across Zaire. According to the specimens examined, the separation between *natalensis* and *picta* could be along a line which passes close to Albertville and a little to the north of Kasaji. But on the other hand Benson (1964: 57) records two specimens of *picta* from Salujinga in the extreme north-west of Zambia, thus to the south of Kasaji. Indeed, Benson & Irwin (1965: 3) record a further two specimens of this form from Salujinga. The situation in this part of Africa, then, seems complicated, and one must await some intermediates. Such could "behave" either like *natalensis* or like *picta*. In the first case, they would have seasonal migrations; in the second, they would be resident throughout the year. Two females in the Institut royal des Sciences Naturelles could be intermediate. Both were collected at Mutsora, in the vicinity of Ruwenzori, on 16th April and 11th August (as they cannot definitely be attributed to *natalensis,* they are not included in the tables). The first one has a mauve spot washed with blue on the ear-coverts; the second shows the start of a blue spot. Nevertheless the black of the crown is more intense in both specimens than in specimens of true *natalensis*.

Furthermore, in the collection at Tervuren I have found six specimens which could also be intermediates. Although the blue spot on the ear-coverts is not visible—perhaps partly due to bad preparation—the colour of the crown is like that of *natalensis*. In two of them, from Bolafa (a little to the south of Bumba, in the Equator province), without indication of date of collecting, the underside is also a relatively pale orange-brown, as in *natalensis*. In two others, collected in April and September at Buta, Lower Uele the crown is as in *natalensis,* but the underside is darker, as in nominate *picta*. Finally, in two from Etaetu, northern Kivu, the crown is more blackish, and they seem intermediate between *natalensis* and *picta*. As to the colour of the underside, it is pale in one of these two specimens, collected in January, but darker in the other, collected in June. The wing-length varies in these six specimens as a whole from 50 to 52·5, mean 51 mm, these figures agreeing with the nominate form. In summary, their status is dubious. Perhaps they are intermediate. Account cannot be formally taken of them in this study, but it is worth drawing attention to them.

It may be noted that 35 specimens of *natalensis* from further north than the southern Katanga range in wing-length from 50 to 56, mean 54·0 mm, which is in close agreement with the figure 54·3 mm given by Benson (1964: 57) for 166 specimens.

Summary: (1) In order to clarify the presence of *Ceyx picta natalensis* in Zaire and adjacent country to the east, more than 600 specimens of *C. picta* in the collections of the Musée royal de l'Afrique Centrale (Tervuren) and Institut royal des Sciences Naturelles (Bruxelles) were examined.

(2) It has been possible to discriminate 91 specimens of *natalensis,* six of them without date of collection. Account is taken in this figure of a certain number of specimens previously recorded in the literature (but not of 10 specimens recently recorded from the Bwamba Forest by Clancey).

(3) In the southern Katanga, 42 out of 47 specimens of *natalensis* were collected between September and May. This corresponds well with the period in which this form is present in Zambia and further south.

(4) In regions to the northward, 33 out of 38 specimens of *natalensis* fall in the period April to August, that is to say, the period in which *natalensis* is absent from the southern Katanga.

(5) The segregation between *natalensis* and nominate *picta* is favoured by the fact that the reproduction of the latter does not take place during the period corresponding to the presence of *natalensis* in its winter quarters. On the other hand, in the southern part of Zaire and to the southward, where there exists a resident population of nominate *picta,* the two forms nest at the same time, and non-integration is possible. But attention is drawn to several specimens which could be intermediate.

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Specimen data on *Bucorvus leadbeateri*

by R. K. Brooke & A. C. Kemp

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Verheyen (1953) appears to be the only author to discuss moult in the Southern Ground Hornbill *Bucorvus leadbeateri* (Vigors), although Stresemann & Stresemann (1966) have discussed it in the related Abyssinian Ground Hornbill *B. abyssinicus* (Boddaert). R. K. B. had the opportunity to examine while fresh a dying subadult female *B. leadbeateri* brought into the National Museum in Bulawayo (NMB) on 6 June, the existing material preserved there, in the Queen Victoria Museum in Salisbury (QVM) and the Durban Museum (DM). A. C. K. examined the material preserved in the Transvaal Museum in Pretoria (TMP).

Details of the state of moult and wear of the primaries, secondaries and rectrices are shown in Table 1. It will be noted that only three specimens show active primary moult (code letter G in Table 1) and these were collected in January, March and June. The bird taken on 3 October, probably about two years old since the egg-laying season in Rhodesia is August to November, shows a simple symmetrical descending mode of replacement of the primaries. However, a bird taken on 23 October, though long out of the nest, shows no sign of moulting, even though the adult female, collected on the following day in the same area, had an egg in the upper part of the oviduct. The 23 October bird is probably about one year old. In the 14 adults and subadults moult is diagonal or asymmetrical starting in one wing after the other, although in which wing is a matter of individual variation. The data in Table 1 suggest that in *B. leadbeateri* the same pattern, with individual variation, of primary moult occurs as in *B. abyssinicus* studied by Stresemann & Stresemann (1966), i.e. diagonal stepwise descending moult in primaries 1 to 7 and diagonal stepwise ascending moult in primaries 10 to 8.

Active secondary moult was evident in three specimens, the two from June and January which also showed primary moult, and a third which showed no primary moult or data on collection. It may well be that more specimens than the three noted showed active moult of the secondaries but this aspect was not checked by R.K.B. The fresh *B. leadbeateri* had 17 secondaries and the data in Table 1 suggest that asymmetry is less marked in moult of the secondaries than in the primaries, and also that there are three centres at which moult starts, i.e. secondaries 1 (the outermost), 10 or thereabouts and 16. There are four alula quills and their mode of moult is a descending one. The fresh *B. leadbeateri* had a subalular apterium similar to that described for *B. abyssinicus* by George & Casler (1972).

Active rectrix moult was present in specimens taken in November,

TABLE 1

Details of moult in the primaries, secondaries and rectrices of *Bucorvus leadbeateri*

A. PRIMARIES

Material		*Age & Sex*		*Date*	*Wing*	*Primaries* 1	2	3	4	5	6	7	8	9	10
NMB	a	Subad.	♀	6 June	L	W	W	W	N	F	G	O	F	F	F
					R	W	W	W	W	N	F	G	O	F	F
	b	Ad.	♀	12 Aug.	L	N	N	F	F	W	W	W	F	N	N
					R	F	F	W	W	W	W	N	F	N	N
	c	Ad.	♀	7 Sept.	L	N	N	F	O	O	F	O	O	F	O
	d	Ad.	♂	4 Nov.	L	F	F	F	F	O	F	W	W	F	W
					R	N	W	N	N	N	O	O	W	N	N
	e	Ad.	♀	14 Dec.	L	N	O	W	O	O	O	O	O	O	W
					R	N	W	O	W	O	O	O	N	O	N
	f	Juv.	♂	3 Oct.	L	F	F	O	O	O	O	O	O	O	O
					R	F	F	O	O	O	O	O	O	O	O
TMP	a	Ad. not sexed	♀?	3 July	L	O	N	N	N	F	W	W	W	F	N
					R	O	O	N	N	F	W	W	W	F	N
	b	Ad.	♀?	Aug.	L	N	N	F	W	W	N	F	W	N	N
					R	N	F	F	W	W	W	W	N	F	N
	c	Ad.	♂	8 July	L	N	F	F	W	N	N	F	O	N	N
					R	N	N	F	F	W	W	W	N	F	N
	d	Ad.	♀	no date	L	N	W	W	W	W	W	N	F	W	N
					R	N	N	N	N	W	W	N	N	N	N
	e	Ad.	♀?	21 Dec.	L	N	N	N	N	N	W	N	W	N	N
					R	N	N	N	N	W	N	N	W	N	N
	f	Ad.	♂	23 Jan.	L	F	G	W	N	W	G	W	W	N	N
					R	N	F	G	W	W	N	G	W	N	G
	g	Ad. (on point of laying)	♀	24 Oct.	L	N	F	F	W	N	N	N	F	W	N
					R	N	F	F	W	W	W	N	F	W	F
	h	Juv.	♂	23 Oct.	L	N	N	N	N	N	N	N	N	N	N
					R	N	N	N	N	N	N	N	N	N	N
QVM		Ad.	♂	25 March	L	F	F	N	F	O	G	O	O	O	—
					R	F	F	N	N	F	O	O	O	F	—
DM		Subad.	♀	29 July	R	N	N	N	N	W	F	F	O	N	F

B. SECONDARIES

Material		*Age & Sex*		*Date*	*Wing*	*Secondaries* 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NMB	a	Subad.	♀	6 June	L	F	G	O	O	O	O	F	G	F	F	F	W	W	W	W	F	O
					R	F	F	O	O	D	F	O	G	F	F	F	N	N	N	N	F	O
TMP	d	Ad.	♀	no date		Some feathers growing in secondaries of each wing																
	f	Ad.	♂	23 Jan.																		

C. RECTRICES

Material		*Age & Sex*		*Date*	*Tail* R 5	4	3	2	1	*Rectrices* 1	2	3	4	5 L
NMB	a	Subad.	♀	6 June	W	F	N	O	N	N	O	N	F	W
	b	Ad.	♀	12 Aug.	F	W	O	N	O	N	O	F	W	N
	c	Ad.	♀	7 Sept.	O	N	W	W	O	W	O	N	W	F
	d	Ad.	♂	4 Nov.	F	N	N	N	G	G	W	N	O	F
	e	Ad.	♀	14 Dec.	O	W	N	—	O	N	W	W	W	—
	f	Juv.	♂	3 Oct.	O	W	W	O	N	N	O	O	O	N
QVM		Ad.	♂	25 Mar	O	O	N	D	G	D	D	O	N	O
TMP	b	Ad.	♀?	Aug.	W	W	N	W	W	W	N	W	W	W
	c	Ad.	♂	8 July	W	N	N	N	N	N	W	F	W	N
	d	Ad	♀	no date	W	W	W	W	W	W	N	W	W	W
	e	Ad.	♀?	21 Dec.	G	N	N	N	G	N	N	N	N	G
	f	Ad.	♂	23 Jan.	G	N	N	G	F	F	D	N	G	D
	g	Ad. (on point of laying)	♀	24 Oct.	W	F	N	W	F	O	F	W	N	W
	h	Juv.	♂	23 Oct	N	N	W	W	W	W	W	N	N	N
DM		Subad	♀	29 July	O	N	N	O	N	N	—	—	N	O

CODE: D = dropped; R = right; F = fresh; W = worn; G = growing; — = damaged; L = left; N = normal; O = old

December, January and March and in all four is asymmetrical. The moult is not basically centrifugal, as stated by Friedmann (1930), nor does it adhere to the strict 5 – 1 – 4 – 2 – 3 order described for *B. abyssinicus* by Stresemann & Stresemann (1966). It has been found that the latter, the basic bucerotid mode of rectrix moult, does not hold for a large sample of three species of *Tockus* hornbills (Kemp in prep.) but rather the modified system 5 or 1 – 4 or 2 – 3. This modified mode of rectrix moult may also be more applicable to the data shown for *B. leadbeateri* in Table 1.

Active moult is found in specimens taken between November and June and it is possible that it does not occur from July to October (the main egg

laying period) even in adult males and immatures of both sexes. Kemp (in prep.) reports nest helpers which are doubtless the immature members of the parties in which this species is habitually seen.

The palate of the subadult female in the National Museum was purplish brown, the iris was pale yellow and the throat vermillion fringed with yellow. Other females in the National Museum and Transvaal Museum had violet blue as well as vermillion on the throat. Two specimens in the Transvaal Museum (TMP b and e in Table 1) appear to have been mis-sexed as males, whereas the violet blue instead of red on the throat and small size (see below) indicate that they are females. From field observations (Kemp in prep.) it appears that breeding females, and probably all adult females, have a violet blue patch on the throat. The age at which the violet blue throat is attained is uncertain.

Only one violet blue throated (fully adult female), one pink throated (immature), and one yellow throated (first year) bird, is found in *B. leadbeateri* parties which normally number four or five birds (Kemp in prep.) It appears that these parties may consist of an adult male, an adult female and their sexually immature offspring which are produced at a maximum rate of one a year. The normal clutch is two eggs but there is no record of more than one well grown nestling in a nest. A 50 per cent. mortality among immature *B. leadbeateri* is by no means unlikely. This would mean that a party of five birds (two adults, three immatures) represents on average the result of six years of reproduction. Thus it is likely that *B. leadbeateri* is not sexually mature until at least its eighth year.

The age at which sexual maturity is attained can also be approached from a study of the moult of the primaries. Of the 16 specimens we have examined only one has yet to moult the first of its primaries. Of the remaining 15 only three show active moult. Thus the period in which the primaries are replaced and which in most birds defines the total moult cycle, must be a very long one: we suggest at least three years. On this basis simple descending moult occupies the second, third and fourth years and normal wing length is attained when the second generation primaries 6 and 7 (the longest ones) have grown. The first diagonal stepwise moult occupies the fifth, sixth and seventh years and only after this can the bird be regarded as fully adult in

TABLE 2

Mensural data suggestive of sexual dimorphism in *Bucorvus leadbeateri*

Source	♂	♀	Sexed ♂, but with violet blue on throat
Wing in mm			
NMB	550 (juv), 610	450, 510, 550, 560	
QVM	580	—	
TMP	525 (juv), 536, 558	544	512, 533, 546
DM	—	575	
Verheyen (1953)	520 (juv), 545, 570, 570	530	
Sanft (1960)	496–618, av. (33) 560	495–550, av (10). 538	
Culmen in mm			
NMB	198 (juv), 210	178, 190, 195, 195	
QVM	218	—	
TMP	187 (juv), 221	207	182, 185, 200
DM	—	180	
Verheyen (1953)	160 (juv), 197, 207, 210	185	
Sanft (1960)	190–221, av. (30) 207	168–215, av. (10) 192	

plumage. During this second moult only females can be separated from adults through their lack of a violet blue throat. Second moult males are phenotypically adult and are treated as such in Table 1. In nearly all hornbills immature birds resemble adult males, not adult females. A juvenile in Tables 1 and 2 is a bird which has not yet grown its second generation primaries 6 and 7.

It appears from Table 2 that females are mensurally somewhat smaller than males, especially in the length of the culmen. Wings were measured with a tape from the carpal joint to the tip of the longest primary which is sometimes the sixth but more often the seventh. Culmens were measured from the base to the tip with a tape, apparently also the method used by Verheyen (1953). Sanft's (1960) ranges do not distinguish between adult and juvenile birds. This is a pity since it appears from Table 2 that juvenile birds are mensurally smaller than adults and subadults of the same sex; nonetheless further study is needed.

The fresh subadult female brought into the National Museum and very hungry weighed 2,230 g which is over 45 per cent. lower than the female weight of 4,000 g recorded in Sanft (1960). Weights of males recorded in Sanft (1960) and Verheyen (1953) are 3,500, 3,575 and 3,937 g.

We are obliged for facilities for study to M. P. Stuart Irwin in respect of the National Museum in Bulawayo, to M. A. Raath in respect of the Queen Victoria Museum and to P. A. Clancey in respect of the Durban Museum.

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The Status and Characters of the Races of the Red-backed Shrike Wintering in the South African Sub-Region

by P. A. Clancey

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The Redbacked Shrike *Lanius collurio* Linnaeus is one of the commoner and more widely distributed of the Palaearctic migrants present in Africa south of the Cunene-Okavango-Zambesi Rivers during the period of the northern winter. On its wintering grounds, which extend from Angola, southern Zaire and Tanzania to the Orange R. and the eastern Cape (Moreau [1972] believes the winter range in eastern Africa to extend as far north as Kenya and the southern Sudan, and follows Fry in also listing Nigeria in West Africa), it occurs in various savanna woodland facies, and is perhaps most numerous in acaciaveld, in degraded areas, and on the scrubby and overgrown fringes of primitive cultivation. Redbacked Shrikes commence to arrive in the Sub-Region in the latter part of October, but do not become widespread until the second half of November, the majority departing the first half of April, but with a few laggards still present mid-May, and even early June in Zambia according to Benson *et al.* (1971). During their sojourn

the birds undergo a complete moult, which is at its height January–mid-March, the populations commencing their northward movement through the eastern half of Africa shortly after its completion.

Variation used by workers to arrange the populations into acceptable subspecies is restricted to males, although, in fact, both sexes show reasonably well-marked geographical variation. In males, the forehead varies from pale neutral grey to almost white in far eastern populations, there is appreciable variation in the shade of grey of the rest of the head-top, hind and sides of the neck and the upper mantle, while the mantle and scapulars vary from almost tawny to deep vinous chestnut. In females the upper-parts vary from dull olivaceous to dark vinaceous brown, this variation appearing to follow a closely similar distributional pattern to that of the males. On the ventral surface there is marked variation in the whiteness or buffiness of the ground and in the degree of pectoral and lateral squamation. Currently three of the four races recognised by Vaurie (1959) are admitted to the South African list (Clancey [1966]; S.A.O.S. List Committee [1969]; McLachlan & Liversidge [1970]), nominate *L. collurio* and *L. c. kobylini* (Buturlin) supposedly common and widespread seasonally, with the central Palaearctic *L. c. pallidifrons* Johansen known from only two or three records from the northern Cape and South-West Africa. In an effort to arrive at a more satisfactory assessment of the relative abundance of these races on the South African wintering grounds and the characters by which they may be determined in this region, some 200 ♂♂ from southern and eastern Africa were assembled and critically studied. In order to minimize the influence of habitat and seasonally induced as opposed to genetically based differences on the conclusions drawn, the precautionary measure of dry cleaning about a third of the assembled specimens was taken.

A series of some two hundred males is scarcely adequate for this type of research, and only from the territories of the Transvaal, Rhodesia and Zambia were samples anything like satisfactory. In allocating African hibernal material to races 10 ♂♂ *L. c. collurio* from the western Palaearctic (Sweden, Lithuania, Germany, Czechoslovakia, Austria and Hungary) were used as controls. Of *L. c. kobylini* and *L. c. pallidifrons* I used short series kindly determined as of these races by Professor Hans Johansen, formerly of the Zoologisk Museum, Copenhagen, and the describer of the latter subspecies. No untoward difficulty was experienced in allocating the great bulk of the material to definite subspecific categories. Conclusions finally reached were on the basis of series laid out and viewed facing the light source, the sky moderately overcast and the time mid-morning.

Bearing in mind the barely adequate nature of the material presently available, the following tentative conclusions were reached: (i) *L. c. pallidifrons* is as numerous or slightly more so than *L. c. collurio*. Of 146 ♂♂ from the South African Sub-Region studied 39 per cent. were *pallidifrons*, with some 35 per cent. nominate *collurio*. (ii) Contrary to expectations, *L. c. kobylini* is far less numerous than either *L. c. collurio* or *L. c. pallidifrons* (26 per cent.); (iii) *L. c. pallidifrons* winters largely in the Kalahari and adjacent xeric areas of the interior of the Sub-Region; (iv) *L. c. kobylini* winters extensively in northern South-West Africa, and in the east from Rhodesia and Moçambique south to Natal; (v) on the basis of present data no hibernal centrum is definable for *L. c. collurio*, which occurs throughout. In so far as the small British Isles population (*L. c. juxtus* Clancey), with backs in males umber brown rather than rufous, is concerned, this study shows that it

does not extend to within present limits, and its wintering grounds are clearly extra-limital (?=hygric regions of Angola or southern Zaire).

In the case of Zambia, the one extra-limital African territory within the species' wintering range from which a reasonably adequate panel of adult males has been available to me, all three races wintering in the South African

TABLE I

Territory	N	Race *L. c. collurio*	*L. c. pallidifrons*	*L. c. kobylini*
Cape	10	5 (50%) 3 Nov. – 15 Jan.	4 (40%) Jan. – 27 Mar.	1 (10%) 12 Mar.
South-West Africa	9	2 (22·2%) 8 Dec. – 6 Mar.	1 (11·1%) 3 Dec.	6 (66·7%) 9 – 28 Mar.
Botswana	17	6 (35·3%) 13 Nov. – 30 Mar.	9 (52·9%) 12 Nov. – 15 Apr.	2 (11·8%) 20 Feb.
Rhodesia	52	15 (28·8%) 14 Nov. – 17 Mar.	20 (38·5%) 23 Nov. – 10 Apr.	17 (32·7%) 11 Nov. – 11 Apr.
Transvaal (mainly west)	35	14 (20%) 7 Nov. – 12 Apr.	17 (48·6%) 12 Nov. – Apr.	4 (11·4%) 28 Sep.(?) – 23 Feb.
Natal, Swaziland & East Griqualand	18	6 (33·3%) 19 Nov. – 11 Feb.	6 (33·3%) 24 Nov. – 4 Mar.	6 (33·3%) 4 Jan. – 1 Apr.
Moçambique	5	3 27 Nov. – 24 May	—	2 1 Mar. – 7 Apr.
Extra-limital Zambia	35	11 (31·4%) 27 Oct. – 7 Apr.	16 (45·7%) 29 Oct. – 14 Apr.	8 (22·9%) 21 Mar. – 8 Apr.

Lanius collurio Linnaeus

Allocation of South African Sub-Region and Zambian material of adult ♂♂ Redbacked Shrikes to subspecies. The assumed relative abundance of each subspecies in a territory's sample is given in the form of a simple percentage. The first and last dates of specimens in each sample are enumerated for the guidance of future workers.

Sub-Region were found to occur, as was to be expected. It will be appreciated from accompanying Table I that the same position as recorded for South Africa obtains in Zambia, with *pallidifrons* the commonest of the three Redbacked Shrike races, and *kobylini* the least so. It is evident from the comments of Benson *et al.* (1971), that Zambian data in large measure corroborate my findings for the South African Sub-Region.

Vaurie (1959) has defined the breeding ranges and racial characters of the four races of *L. collurio*, *sens. strict.*, on the basis of material from the Palaearctic. Examination of skins of both sexes just through the moult from South Africa shows that the criteria ascribed to the individual races by Vaurie require to be modified and expanded somewhat. Hereunder I give my conclusions as to the characters of use in allocating wintering material taken in southern and eastern Africa to subspecies. The breeding ranges have been laid down in Vaurie's work; in so far as Africa is concerned, the races appear to be synhiemal, or mainly so.

(a) *Lanius collurio collurio* Linnaeus, 1758: Sweden

♂. Forehead Pale Neutral Gray (Ridgway [1912], pl. liii), merging insensibly in to Neutral Gray (same pl.) on the crown, nape, hind and sides of the neck and upper mantle; mantle and scapulars Snuff Brown

(pl. xxix). Tertials with snuff brown extending over most of outer and part of inner vane.

♀. Upper-parts Saccardo's Umber (pl. xxix), the hind neck greyer, and breast and lateral ventral surfaces heavily squamated with dusky on a whitish ground.

Remarks: Specimens unequivocally of this subspecies were examined from South-West Africa and the Cape, east to the Moçambique littoral, with no evidence from the available data of a preference for any particular sector of the Sub-Region.

(b) *Lanius collurio pallidifrons* Johansen, 1952 (1944): Tomsk, Western Siberia, U.S.S.R.

♂. As in nominate *collurio*, but with the grey of the forehead lighter, often whitish (Pallid Neutral Gray [pl. liii]), merging to Light Neutral Gray (same pl.) on the crown, nape, neck and upper mantle, this sharply demarcated from the redder mantle and scapulars (close to Russet [pl. xv]). Tertials as in *collurio*.

♀. Upper-parts rather lighter, slightly redder, less olivaceous, especially over the mantle and scapulars than in *collurio*, and hind neck greyer (mantle and scapulars Sayal Brown [pl. xxix]). Ventrally about the same.

Remarks: Originally identified from South Africa on the basis of a male taken at Riverton, Kimberley, northern Cape (Clancey [1961]), and later recorded from Olyvenhout Drift, near Upington, on the Orange R. by Winterbottom (1968) and "Quickborn" Farm, Okahandja, South-West Africa (identified specimen in Transvaal Museum not alluded to by Winterbottom [1971]). Now established as almost certainly the most numerous of the three subspecies occurring within present limits, wintering largely in the Kalahari and peripheral xeric areas of the South West Arid District. Records are now available from the northern Cape, South-West Africa (Okahandja), Botswana, Rhodesia, the Transvaal (mainly dry western) and Natal (coast). There are also numerous records from Zambia, in which territory probably largely a transient to and from desertic areas further south.

A typical example of *pallidifrons* from Kitale, Kenya, is in the collection of the South African Museum, Cape Town. The specimen concerned is dated 7th April, 1929, and was presumably on northbound migration when taken.

Vaurie (1959) records that both *pallidifrons* and nominate *collurio* hybridize freely with *L. c. phoenicuroides* (Schalow), 1875: Chimkent, Russian Turkestan, where their ranges meet, though there is no evidence of any stage of this in South African material (of adult males, as well as sub-adults and adult females), and such interracial hybrids must winter within the Ethiopian non-breeding range of *phoenicuroides*, which is from L. Chad, east to south-western Arabia and Somalia, south in the east of Africa to Malawi (Livingstonia). Not south of the Zambesi R.

(c) *Lanius collurio kobylini* (Buturlin), 1906: Kutais and Ssuran, Transcaucasia, U.S.S.R.

♂. Grey of head-top, hind and sides of the neck and upper mantle darker and bluer than in nominate *collurio* (about Dark Gull Gray [pl. liii]), this frequently more extended caudad over the mantle; mantle and scapulars darker and more saturated, being deep vinous brown (Chestnut Brown [pl. xiv]). Tertials darker, with the snuff brown generally restricted to the lateral outer vane, and the tip starkly white or buffish white in each feather when in a pristine condition.

♀. When freshly moulted much darker vinaceous brown above than *collurio* (mantle and scapulars Prout's Brown [pl. xv]). Below with buffish or vinaceous tinge to ground, and reduced, often vestigial, squamation.

Remarks: This race appears to winter extensively in northern South-West Africa, and in the east in Rhodesia and Moçambique, south to Natal; it is relatively poorly represented in the samples from the northern Cape (1), Botswana and the western Transvaal, in which xeric region *pallidifrons* predominates. *L. c. kobylini* occurs commonly on passage in coastal Kenya, being the only race represented in the series from that area in the Durban Museum collection. Zambian records are dated 21st March–8th April, suggesting its occurrence there is also that of a transient.

ACKNOWLEDGEMENTS

For the loan of material to augment that in the Durban Museum, I acknowledge indebtedness to the South African Museum, Cape Town (Dr. J. M. Winterbottom), the Transvaal Museum, Pretoria (Mr. A. C. Kemp), the State Museum, Windhoek (Mr. P. J. Buys), and the National Museums of Rhodesia, Bulawayo (Mr. M. P. Stuart Irwin). I am also grateful to Professor Hans Johansen, formerly of the staff of the Zoologisk Museum, Copenhagen, for his assistance with these shrikes and for determining material submitted to him. Some two hundred adult males and a rather larger number of sub-adult males and females were studied during the course of this investigation.

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ADDENDUM

Since the above report on *Lanius collurio* in the South African Sub-Region was prepared and submitted for publication, I have been able to study a recently obtained series of freshly moulted examples from Angola. Six ♂♂, two ♀♀ in immaculate dress from Moçamedes (Bibala) and Huila (Chibemba [Gambos] and Cahama) taken between 19th February and 6th April (1967–1970) are all unequivocal *L. c. kobylini*. These specimens have wings in ♂♂ 94·5 – 98, ♀♀ 94·5, 95·5 mm; weights ♂♂ 27 – 32, ♀♀ 24, 25 gm. The discovery that *L. c. kobylini* winters in numbers in south-western Angola ties in with the finding enunciated above that it is the main race occurring in northern South-West Africa, immediately south of Moçamedes and Huila. I am grateful to Dr. A. A. da Rosa Pinto for the loan of the material in the collection of the Instituto de Investigação cientifica de Angola, Sá da Bandeira.

CONTRIBUTORS

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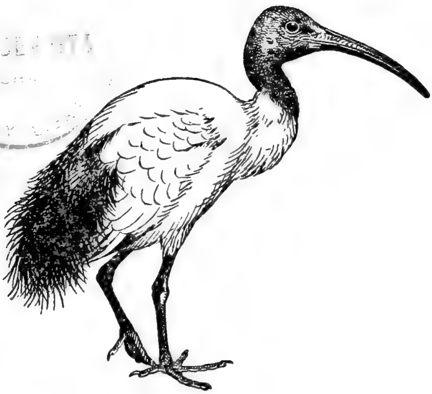

Edited by

C. W. BENSON

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 93 No. 3 Published: 20 September, 1973

The six hundred and eighty-third meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1., on Tuesday, 17th July, 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E., present 12 members and four guests.

Captain Collingwood Ingram read the communication given below and exhibited down feathers of an Eider *Somateria mollissima**.

Mr. Robert Spencer gave an address on feeding by Siskins in gardens, illustrated by slides.

*"Fifty-three years ago, at one of the Club's dinners (*Bull. Brit. Orn. Cl.* 40, 1920: 121), I showed an exhibit which aroused so much interest that I thought some of you might like to see it. While on a visit to one of the more northern of the Orkney Islands I was able to examine a fully developed embryo of an Eider. It was in an egg which had been abandoned by the incubating bird when on the point of being hatched. The dead embryo was still wet from the viscous fluid of the egg's albumen, and so had the usual bedraggled appearance of an unhatched chick. What at first sight seemed to be a clotted mass of wet hairs proved on close examination to be in fact the chick's covering of down feathers, unrecognisable because every feather was enclosed in a protective sheath. Although the encased neossoptiles, or down feathers, each had about twenty barbs, these were so tightly compressed within the protective sheath that they looked more like single horse-hairs than feathers. When dry the integument of the protective sheaths becomes very friable, and in an incredibly short time after hatching it disintegrates from the bottom upwards, finally disappearing completely. Thus in a matter of minutes the erstwhile besodden and bedraggled object becomes transformed into a fluffy little duckling clothed all over in a dark blackish down".

Migration of *Motacilla alba alba*

by John Larmuth

Received 13th April, 1973

During the last week of March 1962 I was on board the Adriatica Lines M.V. *Esperia* bound for Beirut, from Naples, via Alexandria. The second part of this voyage is on an approximately north-easterly course. At 19.30 hrs., when night had fallen and the ship was between 100–150 miles north of the Egyptian coastline, it was noticed, upon coming on deck, that the air within visible range of the ship's lights was occupied by a dense flock of wagtails of the genus *Motacilla* flying parallel to the ship at a speed 2–3 knots greater than that of the ship (about 17 knots). It was estimated that a minimum of 5–10,000 birds were passing the ship at any one time and that any one bird took about two minutes to pass from stern to bow. Birds were not observed returning to the neighbourhood of the ship once they had passed ahead into the darkness. Every available bit of deck space, and every perch was occupied by resting birds. The passage was observed until 02.00 hrs., when I retired to my cabin.

In the morning no living birds were seen, but many thousands of dead *Motacilla a. alba* were being hosed into the scuppers during cleaning up operations.

The total number of birds passing the ship during the time of this observation may conservatively be estimated at 1,000,000.

During flight, in the normal undulatory manner, it was noticed that large numbers of the birds in the lower part of the flock were flying into waves, when a water wave crest coincided with a flight trough. It is possible that the flock was flying at an unusually low height due to the presence of the ship.

[K. D. Smith, to whom the above note was shown, has commented as follows: "I cannot recall a published record of visual *M. alba* passage across the Mediterranean on such a vast scale, though there may be comparable observations in the literature. But it seems reasonable to suppose that after the desert crossing the migrants ran into strong, southerly *khamsin* winds, '. . . which constitute a special hazard to migrants. They blow with devastating violence, typically for periods of two or three days, and at their worst cause sand-storms.' (Moreau, 1961. *Ibis* 103a: 386). Maybe exhaustion caused them to fly into the water, and it is difficult to account for the mortality other than turbulent conditions further south which may have prevented a landing on the coast of Egypt."—*Ed.*]

Wing moult of Ruddy Ducks in Manitoba

by W. Roy Siegfried

Received 5th May, 1973

Two southern hemisphere stifftails, *Oxyura australis* and *O. maccoa* have been reported as moulting the remiges twice annually (Frith 1967; Siegfried 1970). This paper presents evidence for a similar double wing moult in a wild population of the northern hemisphere Ruddy Duck *O. j. jamaicensis*.

During May – August 1971 I collected Ruddy Ducks on their breeding grounds in south-western Manitoba, Canada. Seventy specimens were examined for moult. I also noted the presence or absence of wing moult in a large number of live Ruddy Ducks observed in the field. Additional, useful information was obtained from birds which had been live-trapped.

TABLE 1

Numbers of male and female Ruddy Ducks replacing remiges. Totals of birds checked for presence or absence of wing moult are given in parentheses.

	May		June		July		August	
	1–15	16–31	1–15	16–30	1–15	16–31	1–15	16–31
♂♂	0 (38)	0 (59)	0 (65)	0 (42)	0 (79)	4 (47)	21 (60)	9 (22)
♀♀	1 (43)	0 (61)	1 (31)	0 (45)	0 (62)	0 (60)	2 (61)	2 (9)

Two out of 22 specimens examined in the hand during the period 15th May to 15th June were found to have the bases of the fully grown primary shafts still encircled by remnants of the feather sheaths. In two of these birds, male and female both in full adult breeding plumage, the remnant sheaths extended 5–10 mm up the shafts of the distal primaries. The primary feathers of all specimens collected in May were fresh and immaculate. They appeared to have been newly acquired, probably in late-winter/early spring, and prior to the birds' arrival in early May in Manitoba. Two females, however, were

found to have developing, less than half-grown remiges. Clearly, these individuals must have commenced moulting the wings after having completed the spring migration. One of these birds was first observed on 15th May, and the other individual was taken in a decoy trap on 9th June. This female was fitted with a beak marker. Subsequently, she made one attempt to breed, but lost the eggs to a predator. I consider these two cases, of birds moulting soon after arrival on the Manitoba breeding grounds, as atypical; and believe that the birds were first-year individuals which hatched relatively late in 1970 and/or in an area to the south of Manitoba. Table 1 shows that, commencing August the incidence of moult of the remiges was common, especially in males, in the population. Those males which were in the process of replacing their remiges were still in mainly bright breeding plumage.

In summary, it appears that generally Ruddy Ducks breeding in Manitoba moult their wings in late-summer/early-fall before departing for their winter quarters where presumably they undergo a second wing moult in late-winter/early-spring before migrating northwards.

In a previous paper (Siegfried 1970), I could offer no explanation as to what the selective advantage of this remarkable double wing moult might be to the Oxyurini. I can add very little to this except to note that none of the Ruddy Duck specimens, including those collected in late summer, showed any obvious signs of hard wear on the remiges. By contrast, a male *O. maccoa* examined during its breeding cycle in the south-western Cape, South Africa, had its secondary flight feathers (nos. 1 – 6) worn down to about half their normal length. Wear of this kind presumably might result by frequent performance of display flights across water (see Johnsgard 1965, 1968 for descriptions of this behaviour). However, display flights occur less often in *O. maccoa* than in *O. j. jamaicensis*, though the season for their occurrence is considerably longer in individual *O. maccoa* (Siegfried unpubl.)

Acknowledgements:

The work was made possible by grants from the Delta Waterfowl Research Station, the Chapman Memorial Fund of the American Museum of Natural History, the South African Council for Scientific and Industrial Research and the University of Cape Town. I am grateful to these bodies for their support. The Canadian Wildlife Service gave permission for the taking of birds.

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Numenius minutus, Falco subbuteo and *Caprimulgus europaeus* in the Seychelles

by C. J. Feare

Received 16th May, 1973

Among many migrant land and shorebirds recorded in the Seychelles in October, November and December 1972 were some new to the Malagasy Region. Three of these, *Numenius minutus*, *Falco subbuteo* and *Caprimulgus europaeus*, were identified from photographs by Messrs. C. W. Benson and

R. Wagstaffe. The photograph of *N. minutus* was taken by Dr. R. J. Raines, while those of *F. subbuteo* and *C. europaeus* were taken by Mr. Guy Savy, and all of these have been deposited in the University Museum of Zoology, Cambridge. These species all occurred on Bird Island, the northernmost island of the Seychelles archipelago. The *N. minutus* was first seen there on 14th October 1972, during my residence on the island, and I therefore had many opportunities of watching and filming the bird. According to Mr. Savy, it was still present in late December 1972. The *F. subbuteo* was found dying and the *C. europaeus* found dead in early December by Mr. Savy, who measured the wing (flattened chord), bill (from feathers) and tarsus of each bird, and kindly sent photographs of them to me.

The following details of these birds were obtained:

Numenius minutus:

In flight, this bird was immediately distinguishable from all other palaearctic shorebirds by its resemblance to a small, sandy-coloured Whimbrel *N. phaeopus*, but completely lacking white on the rump and back. Its general appearance was of a warm sandy-buff coloured bird with darker brown markings, especially on the dorsal surfaces. It lacked the "deep-chested" appearance of a Whimbrel.

At rest, it was much smaller than a Whimbrel, and also smaller than a Bar-tailed Godwit *Limosa lapponica*. It stood about as tall as a Grey Plover *Squatarola squatarola* but had a much slimmer build. The back and wings were creamy-buff spotted with dark brown. The tail was similarly marked, but the spots tended to form bars across the tail. The rump was the same colour as the back. The breast was sandy-buff, almost clear but lightly streaked with brown, especially on the sides. The belly and under tail coverts were a clear creamy-buff, and long creamy-buff feathers projected backwards from the top of the thigh. The superciliary stripes, a stripe down the centre of the crown, and the cheeks, were creamy-buff, much paler than in Whimbrels, while the rest of the crown and a mark between the superciliary stripe and the cheek were rich brown. The back of the head had a much more square appearance than in Whimbrels. The bill was comparatively short but down-curved; it was brown with a pink base, this being especially noticeable on the lower mandible. The legs were creamish-grey.

When flushed the bird uttered a fairly faint but harsh croak, sometimes di- or tri-syllabic, in which case it resembled the beginning of a Whimbrel's call. The only other call heard was a trill, which was given while Dr. Raines was stalking the bird in order to obtain photographs.

It was always found in open country on the island, usually on the half-completed airstrip, but occasionally in grassy areas in the Sooty Tern *Sterna fuscata* colony.

This species breeds in north-east Siberia and normally winters in Australasia, and its appearance in Seychelles was probably a freak occurrence.

Falco subbuteo:

This bird was captured and photographed alive in early December 1972, but it subsequently died. The measurements obtained were: wing 265 mm, bill 14 mm, tarsus 26 mm. According to Mr. Benson the bird was an adult, and the wing length places it in the nominate race.

Between October and April of the years 1971–72 and 1972–73 several unidentified falcons have been seen in the Seychelles. Benson & Penny (*Phil. Trans. R. Soc.* 260B, 1971: 515–516) have stressed the difficulties of identifying falcons on Aldabra, where they considered that most migrants were

probably attributable to *F. eleonorae* or *F. concolor*. This may also be true of migrant falcons in the Seychelles, but *F. subbuteo* may also occur regularly.

Caprimulgus europaeus:
This bird was found dead in early December 1972, and its measurements were as follows: wing 190 mm, bill 6 mm, tarsus 15 mm. In view of its dark colour and long wing Mr. Benson concluded that it was of the nominate race, and the absence of white on the outer rectrices and of white spots on the primaries indicated that this bird was a female.

Subalpine and Grasshopper Warblers in Sierra Leone

by G. D. Field

Received 10th May, 1973

Neither the Subalpine Warbler *Sylvia cantillans* nor the Grasshopper Warbler *Locustella naevia* has hitherto been recorded wintering in the forest zone of West Africa. Moreau (1972) summarised the available information on the wintering grounds of *S. cantillans* as the borders of the southern Sahara eastwards to Lake Chad, with the most southerly record at about 11°N in Nigeria, while for *L. naevia*, apart from one record of *L. n. straminea* in Ethiopia, there are now several records of spring and autumn passage from the western Sahara between Morocco and Senegal, from which Moreau concluded "It is at least certain that many Grasshopper Warblers must winter in West Africa, presumably in a zone more humid than Senegal". It may, therefore, be of interest to record the occurrence of both species in Sierra Leone in the early months of 1973.

On the evening of 1st February at 18.45 (almost dusk) I saw a small bird fly across a creek of the Sierra Leone River about eight miles south-west of Freetown at 13° 08′ W and 8° 21′ N. It disappeared into an isolated triangular patch of *Avicennia* mangroves, only a few yards thick, growing on a piece of waste land beside the jetty. Idly wondering whether it might be an *Acrocephalus* warbler, I approached and caught a glimpse of a mantle so blue-grey that I was reminded of one of the grey *Muscicapa* flycatchers, but behaviour showed at once that it was a warbler. By walking slowly back and forth along the two landward sides of the mangrove thicket I was able to catch sufficient fleeting views to take an adequate description. The bird was not shy but extremely active, insect-hunting low down among the leaves, rarely more than two feet above the ground though often close to the edge. Often its progress could only be followed by the movements of the leaves as it worked through the bushes; once it made a little vertical flight up and down, flycatcher-like. I watched it until it became too dark for further observations and took the following description: upper parts blue-grey, particularly bright on the head, wings browner with pale feather edgings; a clear and striking white moustache streak; underside brick red or pinkish russet, becoming duller on belly, under tail coverts whitish. Beak dark, eye red (this would, in fact, have been the eye-ring).

The isolated occurrence of one Subalpine Warbler is not of great significance, though it is interesting that the habitat—*Avicennia* mangroves—is the same as that recorded in the Gambia. By its very nature such a habitat is not easily searched for birds and there are vast areas between Gambia and Sierra Leone which could be frequented by the species without discovery.

The record of the Grasshopper Warbler is more interesting in that at least two and possibly three individuals were concerned. I spent March 25th to 29th at a small town, Njala Komboya, in central Sierra Leone, 11° 27′ W and 8° 12′ N, for the purpose of making a rapid bird survey of an area not previously visited. The country is remote and entirely rural. A barely motorable road reaches Njala from the south and beyond are only footpaths to villages from which agriculture is practised on the basis of shifting cultivation. It is an area of well-watered, often swampy, valleys and small hills rising at their highest to 1,400 ft. a.s.l. All was once forested and patches of high forest remain, particularly around villages as 'sacred bush', as well as riverine forest along streams. The bush is cut and burnt for a season's agricultural operations and then left to regenerate for several years, the result being a thick and virtually impenetrable tangle. Other areas have been taken over by grass and here a variety of savanna species have entered, there resulting a typical mosaic of forest and derived savanna vegetation.

I was at once struck by the richness of the bird fauna, particularly of passerine palaearctic migrants: *Sylvia borin* was extraordinarily abundant while *Hippolais polyglotta* and *Acrocephalus scirpaceus* were seen far more often than normally in Sierra Leone and I suspect that the birds were on passage especially as the commonest migrant warbler *Phylloscopus trochilus* was virtually absent and had presumably already left. The Reed Warblers were particularly interesting, seen not only in their normal wintering habitat of long, coarse grass but also in burnt vegetation and even thick bush.

One north-facing hillside consisted at the top of thick, dry bush some 25 feet high, on one side of the path newly felled. Down the slope there was a patch of rocky deciduous forest, dominated by a few huge *Ceiba pentandra* trees, the smaller trees beneath almost bare and with little ground vegetation. Below this was lusher thick bush up to 15 feet high and along the valley floor ran a stream with a strip of dense riverine forest along its banks, the whole slope being some five or six hundred yards long. On 28th March in mid morning a small warbler flicked across the path at the lower edge of the forest patch and crept at great speed through the tangles. Though puzzled I could only assume that it was a Reed Warbler and as there was no hope of seeing it again I ignored it. On 29th March at 8 a.m. in the thick bush just above the stream, some two hundred yards further down, I flushed a small bird from on or near the ground close beside the path; it flew a few feet and then skulked through the shrubs close to ground level and crept away. All I caught was a glimpse of a brown upperside heavily spotted and noted "very grasshopper warbler-like". I waited for some time without seeing it again but a few minutes after it had disappeared I heard a short, sharp, truncated burst of reeling song, lasting only a few seconds, quite unlike anything previously heard in Sierra Leone but reminding me at once of a Grasshopper Warbler.

Two hours later on my way home I flushed another bird in the dry bush at the top of the hill, again from close beside the path. Because it was between the path and the felled area the bird could only fly three or four yards from me, where it stopped on a small branch two feet up and peered at me, dipping forward and flicking from side to side in undecided fashion, later taking little hops behind the leaves and stopping again to peer, sometimes craning right up to look at me over the leaves, appearing in such a posture almost pipit-like, Finally, having made up its mind, it threaded its way quickly and efficiently through the vegetation, coming in fact extremely close to me but most of the time lost to sight behind the thick foliage of a felled tree, and when I moved to keep pace with it it disappeared entirely.

Despite the fact that it was moving almost the whole time I had good views at close range and took the following description: general appearance distinctly smaller than *Sylvia borin*, slimly proportioned with a rather long and wedge-pointed tail, beak straight, neither pronounced like *Acrocephalus scirpaceus* nor curved like the *Cisticola* genus. When moving it crept hunched and mouselike, though when craning to look at me it stood quite tall. Whole bird rather pale olive-brown; head top finely streaked with no noticeable eye-stripe but a definite small circle of pale bare skin round the eye, mantle rather plain olive-brown with fewer spots but back and wings heavily spotted with dark brown, flight feathers dark. Tail plain brown with a slight suspicion when fluffed out of a pale outer edge. Underside: chin and belly whitish, breast pale olive-brown, faintly drop streaked, flanks and under tail coverts far more heavily streaked. Eye dark, beak upper mandible dark, lower rather bright yellow (it was difficult to be certain how the two colours combined, the impression being that most of the yellow was at the gape rather than the tip), legs rather bright pinkish flesh. The whole bird gave the appearance of being decisively coloured and newly moulted.

There can be little reasonable doubt that two individuals were involved on 29th March and possibly a third on 28th March. That such a skulking bird should be seen twice in one morning suggests that it was locally abundant and this, in conjunction with the movements of other warblers in the area, suggests that some migratory movement was taking place.

Reference:
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Some calls and behaviour patterns of the Plumbeous and Rufous Pigeons

by Derek Goodwin

Received 21st May, 1973

INTRODUCTION

In October and November 1972 I made some observations on Plumbeous Pigeons *Columba plumbea* in the Serra dos Orgaos National Park and in the Boraceia Forest Reserve, in south-eastern Brazil, and on a captive Rufous Pigeon *C. cayennensis* in a large aviary at the Belem Zoo. With the exception of the advertising coo of the Rufous Pigeon, the calls heard and behaviour patterns observed do not appear to have been described for these species. They are, therefore, given here and comparisons made with some other neotropical species (Goodwin 1964, Skutch 1964).

In attempting to transcribe cooing sounds, I have, as previously (Goodwin 1956a, 1970) used ŏŏ to indicate a sound similar to the oo in the southern English pronunciation of the words "Rook", "cook" and "look", and ōō for a longer sound similar to the oo in the words "boot", "root" and "cool".

The sketches are an attempt to give an impression of some of the postures described. They have no pretentions to art or detailed accuracy.

THE PLUMBEOUS PIGEON

At Serra dos Orgaos this species appeared widespread, although not very numerous, in tall, dense hill forest and relatively most abundant on areas of

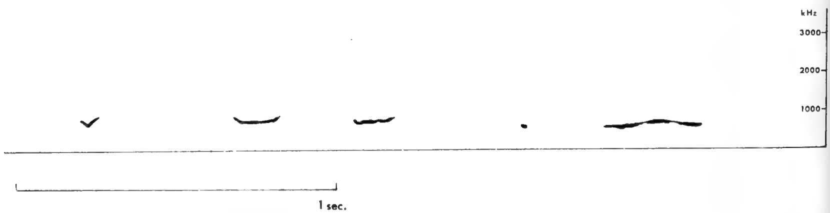
high, rocky ground where the largest trees were, with a few exceptions, smaller in size, and where the trees were interspersed with large succulents and other shrubs. In this favoured habitat the nearest calling individuals appeared to be about 400 yards from each other. At Boraceia, where there was none of this rocky habitat in the hill forest where I observed it, the species appeared to be much less numerous and far more wary of man. At Serra dos Orgaos, most individuals permitted approach to within quite reasonable binocular range without concealment, and with a little stalking and woodcraft could sometimes be observed from very close quarters. In both places, however, the denseness of the vegetation often prevented me from seeing pigeons that were calling very close at hand.

The most detailed observations were made at Serra dos Orgaos on 21st and 25th October. Here the behaviour shown suggested that the pigeons were probably starting their breeding season and that the majority of calling individuals were males as yet unpaired, as they were usually alone. Further observations are needed to confirm this, as it is possible that there may have been undiscovered nests and, if so, that either the female sits for longer periods than is usual for those species of pigeons in which the share of the sexes in incubation is known, or that females of this species give the advertising coo in their "off duty" periods.

Plumbeous Pigeons were seen feeding on only two occasions, once a presumed pair and once a single bird, taking fruit from the canopy of smallish trees. Each bird satisfied itself in less than 15 minutes, which suggests that, at this period, these pigeons needed very little time to obtain food.

Voice: The advertising coo is a rather bubbly-sounding "ŏŏk, ŏŏkŏŏk, ŏŏkōō". Unlike most other pigeons whose voice is known to me, *C. plumbea* appeared never to repeat the advertising coo two or more times without pause. One that I repeatedly timed took just under three seconds to utter the cooing phrase and, when calling regularly, paused for five to six seconds before calling again. At fairly close range the first note of the phrase was usually distinct and sounded as loud as the rest but it appeared to carry less well and at a distance the advertising coo often sounded four-syllabled. One bird (only) omitted the first note on two occasions. It would, therefore, be unsafe to assume that the number of syllables in the advertising coo could alone distinguish this species from the related Ruddy Pigeon *C. subvinacea*, whose advertising coo is described as four-syllabled (Skutch 1964).

As with other pigeons, there were individual differences in the advertising coo that were usually only just noticeable when two birds were repeatedly calling in sequence. Two individuals, however, habitually uttered more noticeably divergent advertising coos: one had a hoarse tone in the final "ōō" of the phrase, the other considerably lengthened and upwardly stressed the final note.



Copy of a sound spectograph, made by Dr. D. W. Snow, of the advertising coo of a Plumbeous Pigeon at Serra dos Orgaos.

The advertising coo of the Plumbeous Pigeon appeared to be given in situations comparable to those of other species (Goodwin 1956a, 1970). It was heard most often from a single bird perched alone in a tree, sometimes on a bare or partly bare terminal branch and sometimes within the canopy. Twice it was heard from individuals whose presumed mates were perched within a few feet of them and once from a bird sitting side by side with its mate, in physical contact. It was once heard given as an apparent contact call between two paired or pairing birds, and I noticed that the presumed female's calls did not sound less loud or less musical than the presumed male's.

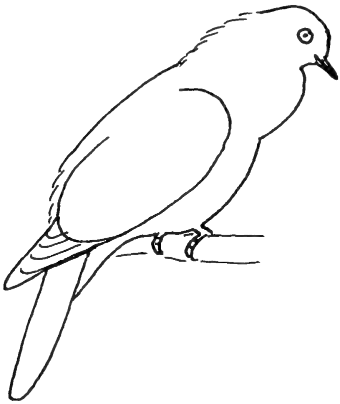
A single "crōōrr", with a purring or snoring tone and very variable in loudness, was frequently heard but usually from birds that were out of sight. One bird, seen at close quarters, spent about ten minutes preening, then looked suddenly alert, uttered this call, gave it again about six seconds later and then started to utter the advertising coo. After a session of cooing it again preened, then flew to another perch nearby, gave the purring "crōōrr" twice, as before, and then again started giving the advertising coo. Later another individual uttered loud, repeated "crōōrrs", interspersed with advertising coos. When I had got within sight of it, I saw the bird was alone on its perch. It then took wing, performed a display flight, and alighted elsewhere.

On the morning of 11th November, at Boraceia, a Plumbeous Pigeon, "A", was heard giving the advertising coo from its perch at the top of a dead tree in dense hill forest; a second bird ,"B", appeared to be answering it with the same call from a large, bromeliad-covered tree about 400 yards away on the opposite slope (I was on a path between them). After about a minute, "A" flew and alighted on a mass of epiphytic growth on a bare tree top about 50 yards from the tree in which "B" was calling. As soon as "A" alighted there, "B" began to utter the purring "crōōrr" note almost continuously. At intervals, for about seven minutes, "A" gave advertising coos and "B" uttered the purring calls, only breaking off on four occasions to give an advertising coo. Twice when it did so it omitted the first syllable of the phrase; there was no doubt about this as on the other two occasions when the "normal" advertising coo was uttered, the first note was loud and clear.

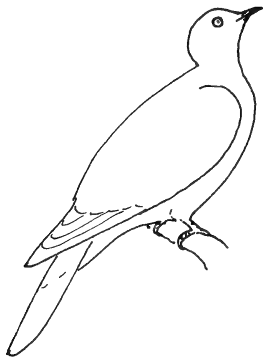
Then "A" flew to "B", or at least to "B"s close vicinity (I could not see them), and at once there were emphatic, repeated purring calls but no sound of fighting. It seemed therefore most likely that "A" had joined a mate or prospective mate on a potential nest site and that, as well as being used as an alternative advertising coo, the purring or snoring "crōōrr" is also the nest call. In at least two other pigeons, the Diamond Dove *Geopelia cuneata*, and the Picazuro Pigeon *Columba picazuro*, a call with a snoring or growling tone is used in both these contexts (Goodwin 1964, 1970).

Some behaviour patterns: The display flight was seen only twice, although I think that under comparable conditions it would have been seen very many times from any of the European species of *Columba* or *Streptopelia.* I saw it first from a bird that for the previous 27 minutes had been perched on a bare terminal bough, uttering the advertising coo at the usual intervals. It suddenly sleeked down its plumage, looked alertly about, then towered up at a steep angle in flapping flight, flattened out and flew at a slight downwards incline to another perch about 300 yards away, where it soon started calling again. The second display flight, seen from a bird (mentioned above) that had been uttering both the advertising coo and the purring call, was similar.

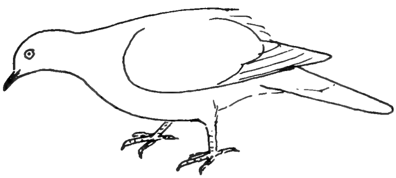
In neither case were there audible wing claps, such as occur in high intensity display flights of all other pigeon species whose display flights are known to me. Possibly these two display flights of *C. plumbea* that I saw were at low intensity but I had the impression that the situation was rather that in this species the threshold for performing the display flight was relatively high. It seems possible that this species may, in an evolutionary sense, be in process of losing this display.



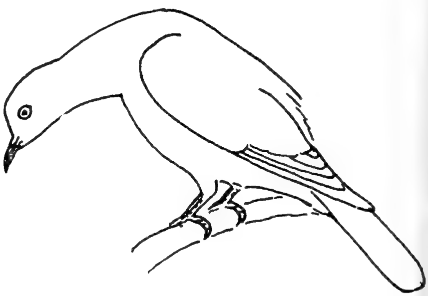
1. Plumbeous Pigeon giving advertising coo.



2. Plumbeous Pigeon in head back phase of the flight-intention movement.



3. Plumbeous Pigeon parading.



4. Rufous Pigeon nodding.

When making flight-intention movements the Plumbeous Pigeon pulls its head far back onto its shoulders and then throws it forward with a rather circular motion. The movement is very similar to that of the Grey-fronted Dove *Leptotila rufaxilla*, and the White-bellied Dove *L. jamaicensis*, and (if I recall it rightly) identical to that of the Picazuro Pigeon. When a Plumbeous Pigeon was alarmed by the sudden swooping of some swifts *Streptoprocne* sp., high overhead, it "froze" in the head-back first phase of this movement.

A Plumbeous Pigeon that was, I think, in sight of another (which I was unable to see until I later flushed it) paraded in much the same manner as the Picazuro Pigeon (Goodwin 1964), striding to and fro on a horizontal bough with head lowered and rump feathers erected.

Preening and sunbathing movements were identical to those of other pigeons known to me. One bird, that was watched from above as it preened, sometimes had the rump feathers fully erected but the upper tail coverts quite flat. The uropygial gland was not thereby exposed as it is in comparable postures of gamebirds and passerines. I have not seen any pigeon make use of this gland when preening, as gamebirds, waterfowl and passerines so conspicuously do, although some have claimed that *C. livia* sometimes does so.

THE RUFOUS PIGEON

Observations on the male in the Belem Zoo were made for short periods several times from 18th to 25th November. The bird was in good condition, very tame, and quite unafraid of being watched. The only other pigeons in the large aviary were a number of Grey-fronted Doves. The Rufous Pigeon made frequent sexual approaches to these but met with indifference or avoidance from most and active aggression from one of them.

Voice: I transcribed the advertising coo as "ōō-ōō, cŏŏk-cŏŏk, ōō-ōō". It was usually repeated from two to five times. The two shorter notes were always interspersed by only two longer ones; thus, if given twice the phrase would go "ōō-ōō, cŏŏk-cŏŏk, ōō-ōō, cŏŏk-cŏŏk, ōō-ōō". The bird invariably began and ended with two long notes. If allowance is made for slight differences of interpretation this transcription agrees well enough with those of Skutch (1964) and Belcher & Smooker (1936).

A single, purring or snoring "crōōrr", very similar to that of the Plumbeous Pigeon, was sometimes given after or in intervals between uttering the advertising coo. The display coo was a single slightly purring "cōōr", repeated at each bow.

Some behaviour patterns: The bowing display was seen on only one occasion. It consisted of a deep bow, repeated several times. The bird's head came to the level of, or possibly a little below the rather narrow metal rod on which it was perching. His tail went up as he bowed but both Dr. Snow and I had the impression that this was probably a compensatory balancing movement rather than an integral part of the display. The Rufous Pigeon was almost sideways on to and only slightly turned towards the Grey-fronted Dove to which he was displaying, but it is quite likely that the narrow perch prevented a more frontal display.

What was obviously friendly nodding (Goodwin 1956b) was shown towards Grey-fronted Doves whenever one of the latter came within about four or five feet of the Rufous Pigeon. It was similar to the nodding of many old world *Columba* species except that the neck seemed to be thrown more forward at the start of the movement. At the culmination of each nod the bill was at an angle of about 40 to 45 degrees from the substrate.

Wing ruffling occurred suddenly between bouts of nodding. As with *C. picazuro* (Goodwin 1964) and the White-crowned Pigeon *C. leucocephala*, it consisted of holding the slightly unfolded wings out from the body and making a quick vibrating movement with them, which produced a sharp rustling sound. This movement has also been recorded for the Spotted Pigeon *C. maculosa* (Russell 1913).

The flight-intention movements were like those of *C. plumbea* except for being more leisurely. This difference was, I think, solely due to the fact that this Rufous Pigeon was only seen to give them when he was clearly not in the least afraid.

SUMMARY

Some calls and behaviour patterns of the Plumbeous and Rufous Pigeons are described. Both utter a call which is alike in the two species and similar to a probably homologous call of the Picazuro Pigeon. The flight intention movements of these three species are also closely similar, possibly identical. The Rufous Pigeon has a wing ruffling movement similar to those of the Picazuro and White-crowned Pigeons.

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The breeding of the Madagascar Banded Kestrel

by J. F. R. Colebrook-Robjent

Received 25th May, 1973

The Banded Kestrel *Falco zoniventris* is confined to Madagascar. There are five *Falco* species on the island of which three are residents; the other two breeding falcons are *F. n. newtoni* and *F. peregrinus radama*. The Banded Kestrel is stated by Rand (1936) to be distributed from sea level to 1,000 m in the forests of the Humid East, etc. "About Maroantsetra and Andapa (i.e. in the north-east of Madagascar) it was fairly common, but was rare elsewhere". Brown & Amadon (1968) summarise what little is known about this falcon, and state under breeding habits that nothing is recorded. The following is taken from my notes made during a recent seven-week trip to Madagascar. However, the period covered by this paper is from 5th to 26th September 1972 when I was in the northern Humid East.

Locality, Altitude and Habitat: The area is the Manantenina River system. From the Bekuna Stream, outside the eastern boundary of the Reserve Naturelle de Marojejy, the valley follows the Bangwabe which runs into the Manantenina River near Mandeny Village. The village of Manantenina is situated where the river of that name joins the Lokoho, about three miles down river from Mandeny. This area lies in the Prefecture of Sambava, Province of Diego Suarez, and is 50 to 100 metres a.s.l. The valley bottom is mostly cultivated with vanilla, coffee, rice, bananas, and coconuts, interspersed with second-growth and strips of remnant forest. The crests of the flanking ridges are still partially covered with degraded rain forest.

General: This falcon is usually referred to as a kestrel and its nearest relatives are assumed to be the aberrant kestrels *F. dickinsoni* and *F. ardosiaceus*, both of Africa (Brown & Amadon 1968). The same authorities, following Swann (1924–1936), state that this species is uncommon. But Rand's quoted statement more accurately reflects the status of this bird in the Manantenina area. The Banded Kestrel was certainly "fairly common" in this valley, the Madagascar Kestrel *F. newtoni* being very common. It was never seen to

hover (it apparently does so rarely), but neither was the more "typical" kestrel *newtoni* ever seen to hover. As Rand states, it remains perched on dead branches for long periods.

Voice: "A sharp scream and a chattering 'kek-kek-kek'" (Brown & Amadon). In my experience it gave a low call or was often silent, but as it often perched in trees above running water it is possible that its call was not heard on some occasions. I was watching a pair of these falcons on 6th September at Manantenina. They were feeding on small reptiles (probably chameleons) on the exposed bare branches of *Albizzia* trees. After picking off some small prey from a branch one of these birds uttered a faint "tck-tck-tck-tck-tck" opening its mouth wide as it did so, each note being rendered at intervals of more than a second. I then lost sight of the bird, but could still hear it "tcking". I eventually spotted the bird again. It had entered a thickly foliaged large tree, still "tcking", and was making its way slowly down towards a large basin-shaped epiphyte growing on a lateral branch. It then dropped down into the centre of the epiphyte and briefly shuffled about before hopping out and starting again to "tck". It then repeated the performance over again. See also under *Breeding*.

Food: Brown & Amadon noted that the principal food items are insects and small reptiles (including chameleons) and also some birds, the former being taken both on the ground and in vegetation. All certainly identified prey noted by me was chameleons taken from trees. In the crop of one specimen collected was a small chameleon in six pieces; in the stomach were the remains of another chameleon. All prey was collected from vegetation, usually high up on the upper branches of bare *Albizzia* or other leafy trees. This falcon has acute eye-sight. After perching immobile for some time they suddenly take off with a rapid flight and swoop up into the foliage of trees 200 or more metres away and return with a chameleon. Once a bird plunged perhaps 100 metres into very thick-foliaged rain forest appearing seconds later with its usual prey. Unlike most falcons, the Banded frequently enters thick vegetation. Chameleons are placed securely in a small fork of a branch the head being eaten first. If caught by the male the remainder of the prey is then frequently offered to the female who eats it from the neck to the tail. Fifteen minutes or more is taken to finish one chameleon, after which the bird remains perched for perhaps 20 minutes with only the occasional slight digestive head-bobbing.

Breeding: As stated earlier nothing has been recorded. *F. dickinsoni* breeds usually in *Borassus* and other palms, sometimes in the domed nests of the Hamerkop *Scopus umbretta*, and once in a hole in an iron bridge (Brooke & Howells 1971). *F. ardosiaceus* commonly utilises Hamerkop's nests, also old nests of other birds and holes in trees (Brown & Amadon).

Although the Hamerkop is common in Madagascar, I did not see these birds or their conspicuous nests in the Manantenina-Marojejy area. After witnessing the remarkable behaviour previously noted (see *Voice*) I suspected that epiphytes (which were very common) would be used by *zoniventris* for breeding, but it was not until 24th September that this was proved to be the case.

On that date I was investigating the nest-hole of a pair of Madagascar Kestrels in a copse of remnant (degraded) forest near the Bangwabe River. A Banded Kestrel was seen to be perched high up on a dead tree at the edge of forest on a nearby ridge. I had taken the precaution of posting a boy as a look-out while I was engaged in climbing to the *newtoni* nest. After changing its perch twice the boy signalled that the falcon was heading towards me. It

flew swiftly and low towards the copse, entering very low and suddenly swooping up into the fork of a large and tall forest tree. It immediately disappeared from sight in a large epiphyte. Unseen by me there was a second bird already there and in less than a minute one of these falcons left the tree, stooping in a low, circular dive and out of sight. Soon after, the remaining bird (which was the female) dived off the epiphyte and swooped up to the upper bare branches of another tree. This bird was then promptly offered a small chameleon by the male which suddenly appeared with it. The birds remained close together for a while when the male, without apparent warning and with quivering wings, mounted the female for over five seconds. During the act the female kept up a not very audible but high-pitched "kik-kik-kik". After this the male flew off, directly over me (I was not hidden), twisting away in characteristic rapid flight. It was seen to catch another chameleon and settle inconspicuously in a nearby leafy tree.

Fifteen minutes later, the female returned to the epiphyte, standing in full view in the middle of it and then slowly disappearing inside. I climbed up a nearby tree and was able to look down into the epiphyte. The falcon then stood up and departed revealing a fairly deep empty scrape at one side of the bare, earthy interior.

The following day I returned to the copse. At mid-day one of the Madagascar Kestrels flew to the Banded Kestrels' nest site, but was quickly chased off by the female Banded which had been perched unseen nearby. The Banded then settled on the epiphyte and rotated several times on the scrape. It was also seen to peck about rather lethargically in the area of the scrape. Most of the time it simply crouched or stood up in the interior or outside on the leaves of the parasitic plant. About 30 minutes later the female flew off and did not return for over an hour. One of the pair was later seen soaring over the site, in bright sunlight, rather quickly in broad circles. This was probably a form of display as it is quite uncharacteristic of normal behaviour. From below the body appeared dark as did the under wing coverts; contrasting with the pale brown and faintly barred primaries and heavily barred tail.

Later, in the same afternoon, a second nest site further up river was investigated. This had been found by Michel Rakotonirina, my interpreter, earlier that morning. This site was a broad epiphyte 13 metres up on the trunk of a large forest tree standing almost alone in a line of trees and bushes along a stream running into the Bangwabe. As we approached the male was seen perched nearby on a branch of a dead tree. Although I had frequently used a nearby track I had only once before noted a Banded Kestrel in this area. Rakotonirina reported seeing one of these birds fly to the epiphyte and later leave it to alight on the nearby dead tree where mating took place.

One of my Malgache guides then climbed the tree. As he was about to reach the epiphyte the falcon rather slowly hopped out onto the first branch and flew off without a protest. The climber reported a shallow empty scrape in the centre of the epiphyte.

In the case of a third record, no precise nest site was located before I had to leave the area on 26th September. On that date a male Banded Kestrel was seen perched on the bare upper branches of an *Albizzia* just above the path leading to (and just outside) the village of Manantenina. This area is less than 100 metres from where the incident described under *Voice* took place. However, the falcons had not been seen again in the former area. There is no true forest here, but a few large trees (mostly *Albizzia*) stand about the vanilla and coffee plantations. As I watched, the male was joined by the larger

female when she was presented with a chameleon and soon after mounted for less than five seconds. This female was later collected and proved to be in breeding condition. The oviduct appeared to be swollen, the largest ovum measuring 9 mm.

From the foregoing it would appear that clutches would not be completed before the end of September or early October.

Epilogue: On 23rd October the tree at the second site was climbed by the same Malgache guide as before. The nest then held three eggs of which two were broken; all heavily incubated. Hery Christophe, the Forest Guard, forwarded the remaining egg to me. It is yellowish, rather evenly speckled and stippled with light yellowish-brown, the markings tending to be darker brown on the broader end. The dull and yellowish markings are probably due to the length of incubation. The egg measures 42·8 × 33·7 mm. The average of 48 eggs of the much smaller *F. newtoni* is given as 35·8 × 28·8 mm (Brown & Amadon).

Summary: Three pairs of the Madagascar Banded Kestrel *Falco zoniventris* were studied in north-east Madagascar during two weeks in September. Pre-egg-laying behaviour and nesting sites are recorded for the first time, together with the first known egg of this falcon.

Acknowledgements: My thanks are primarily due to Professor Charles Sibley, of Yale University, for enabling me to visit Madagascar and for many other kindnesses, not least for criticizing a preliminary draft of this paper. I was helped in the field by Jali Makawa (a wonderful companion), Michel Rakotonirina (my interpreter) and Hery Christophe (and his two able assistants, Robeson and Tizzy Antoin, who collected the egg of the Banded Kestrel). Others who have helped in several ways are C. W. Benson, R. J. Dowsett, P. Griveaud, and R. Wagstaffe. J. M. Andriamampianina, Chef des Eaux et Forets, was particularly helpful in granting permits and in many other ways.

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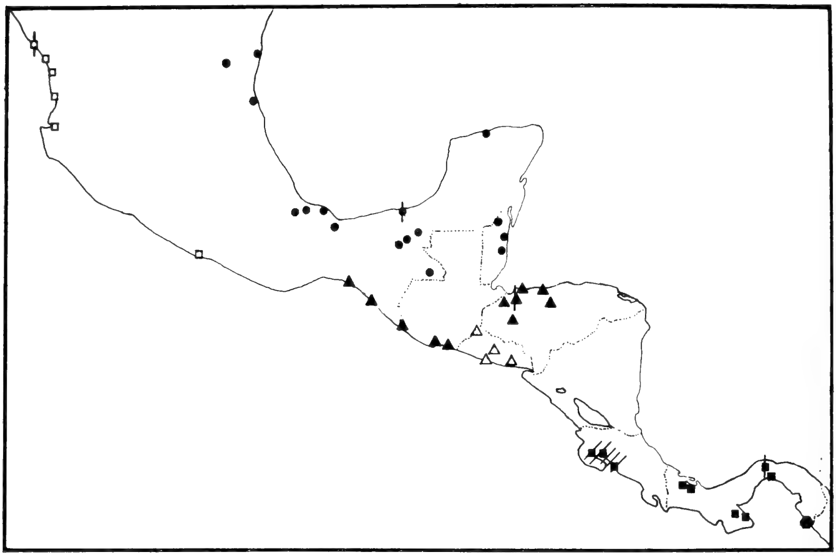
A review of the Boat-billed Heron *Cochlearius cochlearius*

by Robert W. Dickerman

Received 29th March, 1973

The relationship of the Boat-billed Heron *Cochlearius cochlearius* at the subfamilial, familial and tribal levels within the order Ciconiiformes has recently been discussed by Bock (1956), Cracraft (1967) and Dickerman (1971), but the subspecific variation within the species has not been reviewed since the description of *C. c. panamensis* Griscom (1926). During the course of investigations on the possible role of birds in the ecology of arboviruses in Mexico and Guatemala, and on the nesting biology of *Cochlearius* in Mexico (Dickerman & Juarez 1971; Juarez & Dickerman 1972), series of Boat-billed Herons have been collected that, together with the limited amount of material already available in museum collections, have permitted this review of the Mexican and Central American populations. Measurements were recorded to the nearest millimetre (Table).



FIGURE

Distribution of the races of *Cochlearius cochlearius* in Mexico and Central America. Open squares, *zeledoni;* circles, *phillipsi;* triangles, *ridgwayi* (open triangles, localities reported in Dickey & Van Rossem 1938); squares, *panamensis;* hexagon *cochlearius.* Localities with vertical lines are type localities. Hatched region represents intergrade zone *panamensis* × *ridgwayi.*

TABLE

Measurements in millimetres of adult Boat-billed Herons from Central America, with mean and standard deviation

	wing chord	tail	tarsus	exposed culmen
Males				
East Coast Mexico	265–296 (281·9) SD 7·8 n=28	110–122 (114·8) SD 3·5 n=28	72–87 (79·9) SD 3·2 n=29	78–92 (85·2) SD 3·3 n=29
West Coast Mexico S. to Isthmus of Tehuantepec	259–273 (269·6) SD 3·3 n=14	102–110 (106·6) SD 2·2 n=14	71–83 (79·4) SD 3·0 n=16	78–88 (83·7) SD 2·8 n=16
Pacific coastal Chiapas (Mexico), Guatemala and Honduras	262–283 (271·5) SD 6·6 n=16	105–114 (110·1) SD 3·3 n= 16	71–83 (79·2) SD 3·1 n=14	78–87 (83·6) SD 3·9 n=14
Females				
East Coast Mexico	268–281 (274·7) SD 4·5 n=15	108–116 (111·8) SD 2·5 n=16	71–81 (74·7) SD 2·6 n=15	72–84 (78·2) SD 3·9 n=16
West Coast Mexico S. to Isthmus of Tehuantepec	258–273 (264·6) SD 4·4 n=10	100–107 (104·0) SD 3·4 n=10	73–78 (75·4) SD 1·9 n=10	76–82 (78·6) SD 1·8 n=10
Pacific coastal Chiapas (Mexico), Guatemala and Honduras	255–274 (268·3) SD 6·9 n=14	105–116 (109·4) SD 3·0 n=19	66–78 (73·1) SD 3·2 n=14	72–81 (76·7) SD 2·7 n=14

Cochlearius cochlearius zeledoni

Cancroma zeledoni Ridgway (1885). Type locality, Mazatlan, State of Sinaloa, Mexico.

Diagnosis: Pale "lavender" grey dorsally, forehead usually whitish, washed with pale-grey or buff: wing and tail shorter than in the birds of the Gulf coastal lowlands of Mexico.

Range: Pacific coastal areas of Mexico from Mazatlan, Sinaloa, south at least to the Rio Papagallo, Guerrero (see Figure).

Cochlearius cochlearius phillipsi new subspecies

Type: Adult male no. 803,080 American Museum of Natural History, collected *ca.* eight km east of Atasta, State of Campeche, Mexico, 13th February 1966 by Robert W. Dickerman (original field number RWD 13,677). Testes 27 × 13 and 23 × 13 mm.

Diagnosis: Similar to *zeledoni* but much larger (Table); paler on chest and sides of neck than the population of the Pacific lowlands of Chiapas and Central America.

Range: Gulf and Caribbean coastal zone of Mexico from La Pesca, State of Tamaulipas, south to Belize. Probably intergrades with the next form in the Caribbean lowlands of Guatemala from whence no material is available.

It is a pleasure to name this form in honour of Dr. Allan R. Phillips who is so generous in sharing with others his knowledge of the Mexican avifauna.

Cochlearius cochlearius ridgwayi new subspecies

Type: Adult male no. 134, 122 Carnegie Museum, collected at Coyoles, Department of Yoro, Honduras, on 17th June 1950 by Arthur C. Twomey and Roland W. Hawkins (original field number 14,293). Noted as "breeding", "TGE" (testes greatly enlarged).

Diagnosis: Similar dorsally to *zeledoni* but breast a richer, deeper, vinaceous; much paler throughout than *panamensis*. Averages smaller than *phillipsi* but larger than *zeledoni*. The breeding birds of the Pacific coastal area of Chiapas (and those of adjacent Guatemala), while showing the subspecific characters, average slightly paler than Honduras specimens.

Range: Pacific coastal areas of State of Chiapas, Mexico; Guatemala; and at least the Caribbean lowlands of Honduras. The range of *ridgwayi* is disjunct from the southern part of the range of *zeledoni* by approximately 450 km in the Isthmus of Tehuantepec region. On the Caribbean lowlands there is a sharply-stepped cline between Belize and the type locality of *ridgwayi*. Unfortunately no adult specimens are available from the intervening coastal region of Guatemala. Locality records for El Salvador from whence no specimens were examined are taken from Dickey & Van Rossem (1938).

This form is named with respect for Mr. Robert Ridgway whose works form the backbone of American ornithology.

Cochlearius cochlearius panamensis

Cochlearius cochlearius panamensis Griscom (1926), type locality Corozal, Canal Zone.

Diagnosis: Much darker, more olive above than the clear grey of the northern races; also more olive, less vinaceous, on sides of neck.

Range: Costa Rica: Boca Rio Matima, Limon, Boca Mala, Puntarenas (Hellmayr & Conover 1948); intergrades with *ridgwayi* in Guanacaste. Panama: throughout Republic except southwestern Darien (Wetmore 1965).

Unfortunately this form is exceedingly poorly represented in collections. I have seen only six specimens that I consider to be adult.

Cochlearius cochlearius cochlearius

Cancroma Cochlearius Linnaeus (1766), type locality Cayenne.

Diagnosis: Adult, very much paler grey dorsally and on sides of neck, upper breast and all of foreneck pure white. Immature, back and wing coverts richer cinnamon than Central American forms.

Range: South America in suitable habitat from extreme southern Panama south to northern Argentina.

To date I have not studied South American specimens of the Boat-billed Heron and follow other authors in considering them all to represent the nominate form.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the authorities of Mexico, Guatemala and Costa Rica for scientific permits to collect birds in their respective Republics. Specimens collected in Costa Rica were taken during field exercises with the Organization of Tropical Studies. Curators of the following collections kindly loaned material or provided access to collections in their care: American Museum of Natural History; Carnegie Museum; Museum of Zoology, Louisiana State University; Museum of Comparative Zoology (Harvard); Robert T. Moore Collection (Occidental College); United States National Museum; and the Western Foundation of Vertebrate Zoology. The research was supported in part by U.S. Public Health Service Research Grant AI-6248 from the National Institute of Allergy and Infectious Diseases.

Dr. Kenneth C. Parkes kindly reviewed the manuscript, and his suggestions have been incorporated in the paper.

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Composite nest of Short-crested Flycatcher *Myiarchus ferox*

by P. J. K. Burton

Received 7th May, 1973

During January to April 1972, I accompanied the British-Trans Americas Expedition on its vehicle crossing of the Darien Gap (Eastern Panama and North-western Colombia). On 26th March, I was at La Lomas de Rumie, a spur of high ground jutting out into the Atrato swamp near the Rio Perancho. Walking along an isolated rough road bordering the swamp, I observed a Short-crested Flycatcher *Myiarchus ferox* carrying nest material. Through watching the bird, I quickly located the nest which was about 12 feet above

the ground in a crevice of a low cliff flanking the road on one side. By scrambling up, I was able to inspect the nest site, and was surprised to find a composite structure containing three nest cups. One of these held four eggs, one held one egg, and the third appeared to be still under construction. The whole structure was composed largely of mammal fur, with snakeskin around the edges of the cups. Apparently only one bird was visiting it. This was eventually collected, and proved to be a female in breeding condition, though with no egg in the oviduct. The composite nest and eggs were also collected. During a fall three of the eggs were broken. However, these, as well as the two surviving eggs (both from the c/4) were all fresh and unincubated. Bird, eggs and nest are now in the collections of the British Museum (Natural History).

The genera *Myiarchus* and *Myiodynastes* are known to lay somewhat larger clutches than the majority of tropical Tyrannidae, a fact which has been linked with their hole-nesting habits by Lack (1968: 174). However, a composite nest of this type must surely be exceptional; it is unfortunate that it was not possible in the available time to discover how many birds were involved.

Reference:
Lack, D. 1968. *Ecological adaptations for breeding in birds*. London: Methuen.

Re-identification of *Rallus pectoralis deignani*

by S. Dillon Ripley & Storrs L. Olson

Received 16th May, 1973

The description of the race *Rallus pectoralis deignani* (Ripley, 1970, *Nat. Hist. Bull. Siam Soc.* 23: 367–368) from Celebes was of particular interest as the species *pectoralis* was not previously known from that island and because *deignani* was subsequently cited as providing a link between *Rallus pectoralis* of Flores, New Guinea, and Australia, and *R. mirificus* of Luzon (Mayr, 1971, *Journ. Ornith.* 112: 302–316). In our independent studies of the Rallidae, we have had cause to re-examine the type and only specimen of *deignani* and fear that we must report that it is actually an aberrant individual of *Rallus striatus*—a species already known from Celebes.

As was noted in the original description, the type of *deignani* differs from normal *striatus* in lacking the white barring in the primaries that is characteristic of that species, and in this respect it does resemble *pectoralis*. However, the degree of this barring is quite variable in *striatus* and the bars may be broad, narrow, or sometimes reduced to disconnected spots. In one specimen from Ceylon examined by Olson (American Museum of Natural History No. 545053), the barring was almost absent. The type of *deignani*, which is an immature, thus represents an extreme in this occasional trend towards the reduction of barring. It does preserve, however, the regularly spaced white bars in the outer web of the outermost primary, which are typical of *striatus* (in *pectoralis* the white markings on the outer web of the outer primary are thin, irregularly spaced spots along the very edge). The specimen is larger than most subspecies of *pectoralis*, except the nominate Australian form, and has a stouter bill and somewhat more extensive white dorsal spotting than *pectoralis*. In these respects it also agrees with *striatus*. *Rallus pectoralis deignani* thus becomes a synonym of *Rallus striatus striatus* Linnaeus and the species *pectoralis* must be removed from the Celebes list.

Migrant *Pernis apivorus* in the Indonesian Archipelago

by C. M. N. White

Received 4th June, 1973

Vaurie (1965: 147–149) treats the west palearctic *Pernis apivorus*, which winters in Africa, and the east palearctic and tropical Asian *P. ptilorhynchus* as separate species, thus following Stresemann (1940, *Archiv. f. Naturgesch.* 9: 137–193). Brown & Amadon (1968: 220–227) treat these taxa as conspecific. The latter are followed here. Finsch (1901, *Notes Leyden Mus.* 22: 241) listed an immature collected by Schädler on 8th December 1897 at Kisar, an island east of Timor, as *P. ptilorhynchus*. The specimen is still in the Leiden Museum, and Dr. G. F. Mees reports that it agrees with immatures of east palearctic *orientalis* wintering in Java. This record has been ignored in statements of the winter range of *orientalis* in recent literature, and probably since Finsch published the original record. It extends the winter range of this form, at least casually, far to the east, and indicates that casual migrants might even reach north-west Australia.

Hartert (1896, *Nov. Zool.* 3: 177) also reported *Pernis* sp. from Saleyer, south of the Celebes, a female with a moulting wing measuring 440 mm, which he thought agreed with Malaysian *ptilorhynchus*. It is certainly much too large for the Celebes species, *P. celebensis*. Stresemann (*op. cit.*) identified it as *orientalis* but otherwise the record has been ignored. These records from Saleyer and Kisar bring migrant Eurasian honey buzzards east of Wallace's Line, and add another species to the comparatively few palearctic migrants east of that line (my tentative total of traced species is only 78).

Dr. G. F. Mees of the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands, has kindly verified the details of the Kisar bird, and incidentally pointed out the Saleyer record again. I am most grateful to him.

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Non-passerine bird weights from Panama and Colombia

by P. J. K. Burton

Received 7th May, 1973

Several recent papers (e.g. Britton 1970; Colston 1971, 1972) have supplied weight data for a wide range of African birds, but comparatively little has been published on the weights of neotropical birds. The best source is probably Haverschmidt (1968), though Collins (1972) has provided some data from Venezuela, and Snow & Snow (1963) from Trinidad. This paper presents the weights of non-passerine birds collected during the Darien phase of the British Trans-Americas Expedition, 1971–2, and follows the same format as Colston (1971, 1972). The specimens were all preserved in fluid as anatomical material, and most are now in the collections of the British Museum (Natural History); some were given to the Gorgas Memorial Laboratory, Panama City. Since most of the birds have been preserved intact, sex is given only for species showing clear cut sexual differences in external features. A number of specimens have, however, been made into skeletons,

and these have been sexed by dissection; this is indicated in the text. All weights were taken immediately after death using Pesola balances, and all are given in grammes. Nomenclature follows Wetmore (1965, 1968); some taxonomic problems are noted in the text. A few of the birds included here are wintering nearctic species. In all, 163 weights of 79 species are listed. A future paper will present similar data for the passerines collected.

Co-ordinates for the localities mentioned are as follows: C.I.M. (Military Instruction Centre, near Pacora), 9° 8′ N., 79° 15′ W.; Rio Espave (Bayano Valley), 9° 15′ N., 78° 45′ W.; La Palma, 8° 24′ N., 78° 9′ W.; Jaque, 7° 29′ N., 78° 7′ W.; Rio Jaque, 7° 30′ N., 78° 5′ W.; El Real, 8° 7′ N., 77° 45′ W.; Pinogana (Rio Tuira), 8° 8′ N., 77° 39′ W.; Boca de Paya (Rio Tuira), 7° 56′ N., 77° 32′ W.; Rio Paya, approximately 7° 56′ N., 77° 27′ W.; Cerro Pirre, 7° 57′ N., 77° 45′ W.; Sautata (lower Atrato valley), 7° 51′ N., 77° 8′ W.; Cienagas de Tumarado (Atrato swamp), approximately 7° 50′ N., 76° 58′ W.; Rio Perancho (Atrato swamp), approx. 7° 43′ N., 77° 10′ W. The three last localities are in Colombia, the remainder in Panama.

Podilymbus podiceps: 300, Rio Jaque, February.
Podiceps dominicus: 126, Rio Perancho, March.
Anhinga anhinga: ♀ (diss.) 1,500, Cienagas de Tumarado, March.
Butorides virescens: 205, Jaque, February.
Florida caerulea: 400, Rio Jaque, February.
Hydranassa tricolor: 335, La Palma, February.
Nyctanassa violacea: 635, 670, 680, 685, 710, La Palma, February.
Tigrisoma lineatum: 815, Rio Paya, February; 755, imm. 725, El Real, March
Sarcoramphus papa: 3,200, Boca de Paya, February.
Coragyps atratus: 1,700, Pinogana, February.
Cathartes aura: 1,400, Rio Espave, January.
Elanoides forficatus: 420, Rio Perancho, March.
Rostrhamus sociabilis: imms. 340, 365, 370, Cienagas de Tumarado (1) and Rio Perancho (2), March.
Buteo platypterus: imm. 350, Rio Espave, January.
Buteo magnirostris: 253, 265, 247, El Real, February/March; 242, 278, Boca de Paya, February.
Busarellus nigricollis: 975, Rio Perancho, January.
Buteogallus urubitinga: imm. 1,200, Rio Paya, February.
Buteogallus anthracinus: 1,200, Boca de Paya, February. This bird belongs to the larger nominate race. The race *B. a. bangsi*, together with other smaller forms characteristic of Pacific coastal mangroves, may be separable as a distinct species, *B. subtilis* (see discussion in Wetmore 1965).
Herpetotheres cachinnans: 575, Boca de Paya, February.
Milvago chimachima: 395, Rio Perancho; 365, Sautata, March.
Daptrius americanus: 490, Boca de Paya, February; 505, Cerro Pirre, March.
Ortalis cinereiceps: 495, El Real, March. This species is treated by de Schauensee (1966) as a race of *O. garrula*.
Aramides cajanea: 440, El Real, March.
Laterallus albigularis: 41, El Real, March.
Jacana jacana: 109, 133, El Real, March.
Belonopterus chilensis: ♂ (diss.) 280, El Real, March.
Charadrius wilsonia: 53, 53, 53, 54, La Palma, February.
Tringa flavipes: 79, El Real, March.
Tringa solitaria: 50, Boca de Paya, February.
Actitis macularia: 32, La Palma, February.
Catoptrophorus semipalmatus: 233, 240, 282, 284, La Palma, February.
Ereunetes mauri: 21·7, 22·9, 25·0, La Palma, February.
Chlidonias niger: 37, 39, Jaque, February.
Columba nigrirostris: 236, La Palma, February.
Columbina talpacoti: 48, 50, La Palma, February; 51, El Real, February.
Columbina minuta: 30, C.I.M., January; 30, Sautata, March.
Claravis pretiosa: ♂ 73, Boca de Paya, February.
Leptotila verreauxi: 146, El Real, February.
Leptotila cassinii: 144, Rio Espave, January; 174, Rio Jaque, February.

Amazona ochrocephala: 405, Sautata, March.
Piaya cayana: 102, C.I.M., January; 120, Jaque, February; 124, El Real, February.
Piaya minuta: 35, El Real, March.
Crotophaga major: 144, 149, Cienagas de Tumarado, March.
Crotophaga ani: 119, 130, La Palma, February; 94, 99, 109, Rio Jaque, February; 104, 118, imm. 59, El Real, March.
Crotophaga sulcirostris: 70, C.I.M., January.
Pulsatrix perspicillata: 885, Jaque, February.
Chordeiles acutipennis: ♂ 57, ♂ 71, ♀ 57, Sautata, March.
Nyctidromus albicollis: ♂ 53, ♀ 50, El Real, March.
Glaucis hirsuta: 5·9, C.I.M., January; 5·2, 5·2, 7·1, Rio Espave, January.
Threnetes ruckeri: 6·2, 6·2, Rio Espave, January.
Phaethornis superciliosus: 5·0, Rio Espave, January; 6·0, Jaque, February.
Phaethornis longuemareus: 2·3, Rio Espave, January.
Thalurania furcata: 4·1, Rio Espave, January.
Trogon melanurus: ♂ 112, Cerro Pirre, March.
Trogon viridis: ♀ 81, Cerro Pirre, March.
Trogon rufus: ♂ 57, Jaque, February.
Ceryle torquata: ♂ 330, ♀ 274, Jaque, February; ♀ 320, Rio Paya, February.
Chloroceryle amazona: ♀ 119, Rio Jaque, February; ♂ 111, ♂ 130, ♂ 135, ♂ 142, Boca de Paya, February.
Chloroceryle americana: ♂ 40, Cerro Pirre, March; ♀ 55, Rio Jaque, February; ♀♀ 39, 55, Rio Paya, February.
Chloroceryle inda: ♂ 60, ♀♀ 53, 60, El Real, March
Chloroceryle aenea: ♀ 14·6, lower Atrato valley, March.
Electron platyrhynchum: 60, Rio Espave, January; 63, 64, 64, Cerro Pirre, March.
Baryphthengus martii: 198, Jaque, February. Included by de Schauensee (1966) under *B. ruficapillus.*
Momotus momota: 108, 128, Rio Espave, January; 109, 119, 120, El Real, March.
Galbula ruficauda: ♂♂ 25·1, 26·3, Rio Perancho, March. Both nominate *ruficauda,* although this area is close to a region of hybridization with *G. r. melanogenia.*
Jacamerops aurea: ♀ 76, Rio Espave, January; ♀ 62, Cerro Pirre, March; ♀ 64, lower Atrato valley, March.
Notharcus macrorhynchos: 109, Rio Espave, January; 99, 103, El Real, February/March.
Notharcus tectus: 33, Rio Espave, January.
Nystalus radiatus: 63, Rio Jaque, February.
Malacoptila panamensis: ♀ 46, juv. 42, Rio Espave, January; juv. 37, Boca de Paya, February.
Nonnula frontalis: 15·2, 15·0, Rio Espave, January; 15·3, Sautata, March. Included under *N. ruficapilla* by de Schauensee (1966).
Monasa morphoeus: 93, 96, 98, 102, Rio Espave, January; 114, 122, Rio Paya, February; 105, 118, Cerro Pirre, March.
Pteroglossus torquatus: ♀ 196, Boca de Paya, February.
Selenidera spectabilis: ♂ 229, Cerro Pirre, March.
Picumnus olivaceus: 10·8, El Real, March.
Celeus loricatus: ♂ 74, Rio Perancho, March.
Centurus rubricapillus: ♂ 55, ♀ 45, C.I.M., January.
Centurus pucherani: ♀ 53, Rio Espave, January; ♂ 62, Jaque, February; ♂ 52, Boca de Paya, February.
Campephilus melanoleucos: ♂ 274, ♀ 181, Rio Espave, January.

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Once more: the identity and authorship of *Treron griseicauda*

by G. F. Mees

Received 4th June, 1973

Sims & Warren (1955) drew renewed attention to the unsettled authorship and identity of *Treron griseicauda*, which by previous authors had been either used for the Javanese subspecies of *Treron pompadora* as *T. p. griseicauda* G. R. Gray, 1856, or for the Celebesian subspecies as *T. p. griseicauda* Wallace, 1863. Sims & Warren (1955) discovered that Bonaparte (1854: 10) had listed *T. griseicauda* as a synonym under the name *T. aromatica*, although his description was, in fact, based on specimens of the Javanese subspecies, and not on *T. p. aromatica* from Boeroe. They concluded that *T. griseicauda* Bonaparte, 1854, notwithstanding the fact that it was first published as a synonym, is an available name, and therefore proposed to call the Javanese subspecies *T. p. griseicauda* Bonaparte, 1854.

A year later, Mayr (1956) objected to the treatment of Sims & Warren, observing that according to the principles laid down at the Zoological Congress, Copenhagen, an otherwise unavailable name does not acquire availability by being cited subjectively in the synonymy of another name.

Subsequently, however, the following emendment of the International Code was adopted by the XVIth International Congress of Zoology (Washington 1963): "A name first published as a synonym is not thereby made available unless prior to 1961 it has been treated as an available name with its original date and authorship, and either adopted as the name of a taxon or used as a senior homonym" (Art. 11[d]).

There cannot be the slightest doubt that Sims & Warren, well before 1961, have used *T. griseicauda* Bonaparte exactly in the meaning of Art. 11(d) and therefore have validated it. The correct name of the subspecies of *Treron pompadora* occurring on Java is therefore *Treron pompadora griseicauda* Bonaparte, 1854.

If it was the change in redaction of Art. 11(d) alone that affected the nomenclature, I might have left the matter as it was, but there are two reasons why a renewed discussion appeared desirable. The first is that Goodwin (1967: 308), in a much-used work, has accepted Bonaparte's name, but without explanation.

The second reason is that even if one rejects *T. griseicauda* Bonaparte, the name *T. griseicauda* Wallace (1863a) for a bird from the Celebes is of doubtful validity, as long as the exact date of publication of *T. griseicauda* Schlegel (1863b) is not known. Schlegel (1863a) mentioned that the first nine sheets of the "Nederlandsch Tijdschrift voor de Dierkunde" were printed around the middle of 1862, but that: "the publication of this work can only begin with 1863". Wallace's name was published in April 1863 (cf. Duncan 1937), Schlegel's paper was not only reviewed in the *Ibis* of July 1863 (p. 359–360), but in the same number Wallace (1863b) devoted a special article to a discussion of it, which definitely shows that it must have been received some time before July, and may well antedate Wallace's paper of April 1863.

Sanft (1960, note 12) has quoted evidence that the first part of the "Nederlandsch Tijdschrift voor de Dierkunde" was published in 1862, as Schlegel (1862), in a work dated August 1862, and certainly published before the end of that year, gave full references, with page- and plate-numbers, to it (*Buceros*

pulchrirostris and *Buceros nagtglasii*). However, this was explained by Schlegel (1863a) as quoted above, and later Schlegel (1873) gave 1863 as year of publication of the pigeons described in the first part of the "Nederlandsch Tijdschrift voor de Dierkunde". A small consequence for the nomenclature is that not, as Peters (1945) and Sanft (1960) did, the "Nederlandsch Tijdschrift voor de Dierkunde" has to be cited as containing the original descriptions of *Buceros pulchrirostris* and *Buceros nagtglasii*, but the "Muséum des Pays-Bas".

I take this opportunity to mention that if one follows Goodwin (1967) in merging the genus *Megaloprepia* with *Ptilinopus* (personally I am unconvinced of the necessity to do so), the species listed as *Ptilinopus formosus* (Gray) by Goodwin, must be known as *Ptilinopus bernsteinii* Schlegel, as correctly pointed out by Schlegel (1863a); see also Wallace (1865: 388). Indeed, under the present Code (Art. 59[b]), *Ptilinopus bernsteinii* has been the valid name for the species right from the moment of its publication.

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St. Vincent Parrot: plumage polymorphism, juvenile plumage and nidification

by Holly A. J. Nichols & Thomas Duncan Nichols

Received 21st April, 1973

INTRODUCTION

We have been able to re-evaluate variation in plumage colour of the St. Vincent Parrot *Amazona guildingii* as a result of our observation of captive and museum specimens and the first captive breeding of this species. One of us (T.D.N.) observed plumage variation in wild parrots and some details of nidification in a preliminary field trip (19–23 April, 1973) to St. Vincent.

PLUMAGE VARIATION

In 1967 the government of St. Vincent granted special permission to Young Island Hotel of St. Vincent to donate two juvenile *A. guildingii* to U.S. zoos. The hotel donated one to the National Zoological Park, Washington, D.C., and the second to the Houston Zoological Gardens. Since *A. guildingii* is an IUCN endangered species, these two zoos and the New York

Zoological Park (Bronx Zoo) and the Chicago Zoological Park (Brookfield Zoo), each having one specimen, instituted a co-operative breeding programme, bringing the parrots together at the Houston Zoo. The Chicago parrot died in 1970; its skin is now at the Louisiana State University Museum of Zoology. The Houston Zoo purchased a fifth, apparently very old *A. guildingii* in 1971. We have thus been able to closely study these five adults. One of us was able to carefully examine an additional twenty-two captive specimens on St. Vincent.

One of us (H.A.J.N.), a former employee of the Houston Zoo, was responsible for the first Houston parrot, the New York parrot and the one offspring they successfully raised in 1972. This was the first time this species had been raised in captivity, allowing us the opportunity to study the juvenile plumage.

The plumage coloration of *A. guildingii* is complex. Clark (1905) and Ridgway (1916) have described it in detail. They describe some specimens which are generally more green than brown, their most conspicuous difference being primaries with the basal portion green rather than yellow. Clark and Ridgway described these green parrots as immature, although Ridgway cautioned in a footnote, "I strongly suspect that in reality [this plumage] represents a dichromatic phase".

James Bond described (pers. comm.) an *A. guildingii* nestling he observed in 1927 as "covered with short, dull green feathers". Allen (1961) reported "young entirely green" probably on the basis of Bond's observation. John Warfield, who was responsible for the two juvenile specimens the Young Island Hotel donated to the U.S. zoos, has written (pers. comm.) that one of the two was always more green. The second, however, he described as being distinctly more brown. Both of these parrots are now at the Houston Zoo and six years old. The first bird's plumage is that described by Clark and Ridgway as immature. The second bird (the breeding female) and the other three specimens including the juvenile parrot, now at the Houston Zoo, have the yellow-brown plumage described by Clark and Ridgway as adult. The juvenile plumage coloration of the one parrot raised in 1972 was, except as noted below, virtually identical to that of the yellow-brown morph parents. There are thus two morphs, green and yellow-brown, and the juvenile plumage coloration of any particular bird is quite similar if not identical to that of its eventual adult plumage. We are aware of eight green morph and forty-eight yellow-brown morph specimens in fourteen museum collections and ten green morph and seventeen yellow-brown morph specimens in captivity.

Clark noted that of the eight specimens he collected, no two were exactly alike in plumage. Similarly we must say it is difficult to find any specimens of the five at the Houston Zoo, of the twenty-two observed in captivity on St. Vincent, and the fifty-six museum skins with like plumage. Although the differences between green and yellow-brown morph specimens are distinct, many yellow-brown morph specimens, such as the mounted specimen in the City of Liverpool Museums, have some areas of green on the back or carpalia. Some birds, such as a yellow-brown morph in the possession of William Miller of St. Vincent, appear to have a more yellowish tone to the breast and fewer greenish areas (we have not been able to positively classify this variation).

There is also considerable variation in other plumage characteristics such as the width of the central blue-green tail band, head coloration, neck coloration, and amount of black feather edging. LSUMZ 69139 for example

is unusual in having a pale yellow chin and adjoining malar region, and an orange throat and posterior malar region, the usual blue being mostly confined to the nape and green to the hind neck. An apparent partial lutino, owned by Miller, has many deep yellow feathers on the nape and hind neck. Two specimens, BM 89.1.20.307 and AMNH 417,403, have collars with very heavy black edging.

Although the excessive variation of head coloration may eventually be understood in terms of distinct morphs, we would only point out the existence of two extremes and their approximate occurence. The breeding male at the Houston Zoo, which is typical of one extreme, has his eye almost surrounded with feathers which are at least tipped with blue-violet, the forehead and anterior crown only being white. The Houston breeding female is an example of the other extreme. There is much more white on her head, the eye always having been completely surrounded by white. The lores, forehead, crown, and anterior portion of the auriculars are generally white except for some pale yellow in the posterior crown. We have not been able to classify the variations between these two extremes, there being several patterns of cartenoid and melanin deposition resulting in heads with mixtures of white, yellow, orange-brown and blue-violet. The head coloration of the Houston juvenile parrot for example is similar to the breeding female's except for some yellow and blue posterior to the eye. We are aware of nine specimens of the first extreme, seven of the second and forty-two we are not able to classify. All variations in head coloration occur in both green and yellow-brown morph parrots.

We have not been able to detect any changes in head coloration from photographs taken over several years of the parrots now at the Houston Zoo. The breeding male for example looked the same in 1972 as when Arthur W. Ambler photographed it in 1959 (Allen *op. cit.* 100). (In the last few months, however, diet changes of the five parrots at the Houston Zoo have been responsible for eliminating much yellow from their head plumage). Many of the individual parrots observed on St. Vincent in the collections of Miller and John Houser were known to be four of five years old. As a group these birds displayed a wide variety of stable plumage characteristics, such as referred to in this paper, specifically having all varieties of head coloration. (We do not believe that any of the plumage colour variation of the twenty-two captive specimens observed on St. Vincent resulted from dietary abnormalities; they were all well fed.) We conclude age does not normally affect head plumage coloration.

We have not detected correlation between sex and any of the plumage characteristics.

FIELD OBSERVATIONS

As Clark indicated, the distinction between the green and yellow-brown morphs (which he considered young and adult) is relatively easy to make in the field. I (T.D.N.) observed both morphs in the upper Buccament Valley. Although I was not able to accurately count the number of each morph observed, I. A. Earle Kirby, his associate, and I observed or heard approximately twenty-five parrots in nine hours. The parrots were eating the abundant fruit of *Pouteria multiflora*.

We found two nest sites, one at 1,000 ft. in an *Ormosia monosperma*, about 40 ft. up the trunk, and one at 1,500 ft. in a *Dacryodes excelsa*, about 80 ft. up the trunk. *D. excelsa* is usually hollow and I was told that it was the normal nesting tree.

Kirby's associate, an unusually observant native naturalist, said that he had never seen "a clutch larger than the normal two". A clutch of two would be in agreement with the 1905 report of Clark, the 1927 observation by Bond (pers. comm.), the 1930 report of Porter, and the clutch of two eggs laid in 1972 at the Houston Zoo.

One egg shell was obtained (laid by a captive bird) from Warfield as a donation to Louisiana State University Museum of Zoology. It measures 38·1 by 30·1, as compared to 43·8 mm by 32·6 mm for the first (infertile) of the two eggs laid at Houston in 1972, and 46·6 mm by 38·8 mm for the egg reported by Harrison & Holyoak (1970).

SUMMARY

Amazona guildingii has been found to display a wide variety of plumage polymorphism. Two major morphs are identified, which had previously been considered as the immature and adult plumages. The juvenile plumage of any individual is the same as its adult plumage. A few details of nidification, and observations made on St. Vincent are reported.

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The humerus of *Ichthyornis* as a taxonomically isolating character

by C. J. O. Harrison

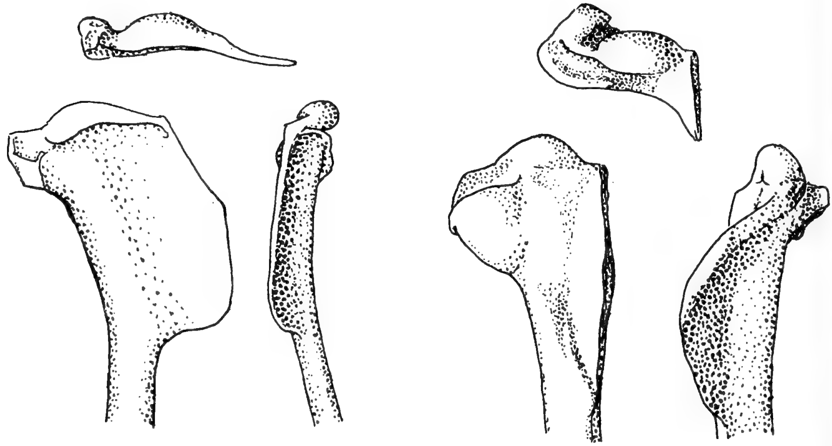
Received 16th June, 1973

Two small sea-birds of the genus *Ichthyornis* were described by Marsh (1880) from the Cretaceous of Kansas. According to him they possessed true teeth, resembling in this respect *Hesperornis*, with which they co-existed. A number

of skeletal elements were found and Marsh commented "In their powerful wings and small legs and feet they remind one of the terns, and, according to present evidence, they were aquatic birds of similar life and habits". He used the skeleton of the Royal Tern as a basis for his reconstruction of *I. dispar*. Gregory (1952) suggested that the toothed jaws associated with the species were those of reptiles and that *Ichthyornis* species had bills like those of modern birds. Following from this, with Marsh's comments on their tern-like appearance well-established in literature, there was a tendency to suggest *Ichthyornis* as the probable ancestor of the modern Charadriiformes (Fisher 1967, Brodkorb 1971).

More recently Walker (1967) and Gingerish (1972) have argued that *Ichthyornis* species were toothed, and have found additional material which appears to confirm this, but quite apart from the question of the presence or absence of teeth *Ichthyornis* species also show at least one other morphological peculiarity, which was remarked on by Marsh but which has received little attention since. This is the size and position of the crests on the humerus. Marsh (*op. cit.*) comments on the exceptional size and position of the deltoid crest in his description of the humerus; but in discussing the reconstruction of *Ichthyornis* he states that "the locomotive organs of *Ichthyornis* are so similar to those of typical birds that they present no such interesting mechanical problems as were suggested by the skeleton of *Hesperornis*". The position of the deltoid crest is, however, quite exceptional.

Normally the deltoid crest is an elongated ridge along the external side of the shaft of the humerus at the proximal end. It provides, *inter alia*, an attachment surface for the large pectoralis major muscle which creates the main



a

b

Figure 1. Proximal, palmar and external views of the proximal ends of left humeri of (a) *Ichthyornis dispar* and (b) *Platalea leucorodia*.

power for the downstroke of the wing in flight. It is usually an elongated prominent flange of bone, stout at the base and thinner towards the edge; but the degree of development varies in different species and in some it is little more than a stout ridge. In all modern birds it projects palmarly from

the external palmar edge of the shaft and is usually almost at right-angles to the transversely-elongated head (Fig. 1b). It may curve laterally the further it projects from the shaft, and towards the edge in some species the outer portion may be at an angle of c. 50 – 60 degrees to the head.

In *Ichthyornis dispar*, the species for which complete humeri are known, the deltoid crest is large and long and projects laterally, continuing the line of the transverse proximal head (Fig. 1a). It forms a thin flange almost at right-angles to the position of those on modern birds. It could be suggested that specimens had undergone some crushing and distortion, but I have examined a specimen of a proximal end of a humerus completely prepared from its matrix, and on this, although the hollow shaft has been crushed, the surface of the outer part of the crest and the region adjacent to the proximal head show no evidence of the displacement needed to change the position of this flange had it originally been in a position comparable with that of a modern bird.

The structural modification was not a general early avian feature. As Yalden (1972) has pointed out, the deltoid crest of *Archaeopteryx* is extensively developed, but an examination of the specimen of the latter in the British Museum (Natural History) reveals that in this bird the deltoid crest projects in a similar palmar plane to those of modern birds. The humerus of *Hesperornis* is reduced to a slender strip of bone, and the only humerus showing some similarity to that of *Ichthyornis* is one from the Lower Cretaceous of the Weald, currently being described (Harrison & Walker, *in press*), on which, although the outer portion of the deltoid crest is broken away, the portion present appears to show similar structure to that of *Ichthyornis* and may be earlier evidence of this modification.

Another peculiarity of the humerus of *Ichthyornis* is the apparent absence of the bicipital crest. This normally forms a rounded, laterally-projecting crest on the internal side of the shaft adjacent to the proximal head, bordering a smooth surface which projects a little palmarly. The size of the bicipital surface and crest varies from one species to another in modern birds, but these are never wholly absent except on the greatly reduced humeri of some ratites.

With the humerus in position on the body of a modern bird the deltoid crest projects horizontally and slightly ventrally along the upper edge of the humerus, but if the humerus of *Ichthyornis* is placed in a similar position the crest projects dorsally. There do not appear to be modifications of the articulating surfaces of the humerus of the latter which would indicate some other position for this bone. Marsh's reconstruction of *I. dispar* (1880) shows this dorsal projection of the deltoid crest.

The position of the deltoid crest in modern birds is presumably that which provides the most efficient surface angle for the functioning of the flight muscles. For that of *Ichthyornis* to work in comparable fashion would involve considerable forward rotation of the humerus and hence of the whole wing. It is improbable that *Ichthyornis* would show evolutionary divergence to produce a less efficient system and much more likely that the modification of the humerus indicates a specialised muscle system which probably involved modification of the mode of flight. Since the changes shown involve an absence of, or change in angle of, surfaces used for the attachment of major muscles for wing movement it is likely that the mode of flight was peculiar and may have involved more gliding, although the modifications of humeri in modern gliding birds such as the Procellariiformes are quite unlike those of *Ichthyornis*.

Assuming that the arrangement of crest on the proximal end of the humerus in *Archaeopteryx* and in modern birds represents the normal condition in the main evolutionary stem in birds, then the development of the deltoid crest and loss of the bicipital crest in *Ichthyornis* represent a marked evolutionary divergence from this, not paralleled in modern forms. It is unlikely that an evolving *Ichthyornis* phylogenetic line would regain the more typical humeral structures, and in this character, as in the probable possession of teeth, it appears to have been an evolutionary blind end, having no ancestral affinities to any known subsequent avian taxa.

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The relative numbers of migrant and resident rollers in eastern Kenya

by L. H. & B. E. Brown

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In February 1968, when touring the Tsavo National Park of eastern Kenya with members of the Fauna Preservation Society, it was noted that the European Roller *Coracias garrulus* was very numerous. The average density was estimated at 2–3 per mile (1·2—1·9/km) of road traversed, which, on the basis of the mean visibility on either side, gave a density of 60–90 rollers per square mile (23–35/km^2). Possibly rollers may have concentrated along roads though there is no direct evidence that they were not evenly spread through the habitat. If similar densities prevailed throughout the Tsavo Park there would have been 480–720,000 in the park itself, while the total in the thornbush area of eastern Kenya alone would be of the order of 2–3 million. This may appear a huge figure; but doubtless these birds collect here from an enormous area of European and Asian breeding habitat.

In the eastern Kenya thornbush there are two main rainy seasons, the long rains extending in good years from late March to mid-May and in bad from mid-April to mid-May; and the short rains, extending from late October to late December in a good and early November to early December in a bad. As a rule the April-May rains are the heaviest, and April the peak rainfall month. However, in some areas the November–December rains are less erratic. The dry seasons which follow, January–March and June–September, also differ, that between January and March being shorter but hotter than the mid year dry season, when July and August are usually cool and overcast.

European Rollers are present in Kenya from October to late April, straggling into May; but are only numerous from early November to March, that is, in the short rains and succeeding dry season. They usually arrive in numbers when the first heavy storms of the short rains occur in early November and bring out an abundance of insect life. Other migrant insectivorous species, for instance Hobbies *Falco subbuteo*, are also very common at this time. Migrant European Rollers then greatly outnumber the local resident species, the Lilac-breasted Roller *Coracias caudata* and the Rufous-crowned Roller *Coracias naevia*. This is a feature common to other migrant genera, for instance hirundines and wagtails.

In an attempt to obtain more exact quantitative data on numbers of resident and migrant species counts were made in 1969–70 of all rollers along stretches of the main Nairobi-Mombasa road at different times of year on journeys to and from the coast. The counts were not made at "ideal" times but fitted in with other affairs. Some of them have already been briefly referred to by Moreau (1972: 181), but are given here in greater detail and related to season and ecological conditions, in Tables I–III.

TABLE I

Early long rains counts, March–April
Food abundant by April. European Rollers on northward passage

Date	Conditions	Sector	*C. garrulus*	*C. caudata*	*C. naevia*	Total
31.3.69	Early rain. Heavy	I	2	9	4	15
	passage N. of	II	103	5	7	115
	C. garrulus	III	68	2	2	72
		Total	173	16	13	202
31.3.70	Poor early rains;	I	0	2	0	2
	bush very dry,	II	8	0	2	10
	few rollers	III	0	0	2	2
		Total	8	2	4	14
25.4.69	Wet, after	I	0	0	0	0
	main departure	II	0	10	8	18
	of *C. garrulus*	III	18	16	21	55
		Total	18	26	29	73
16.4.70	Wet, after	I	0	0	1	1
	early light	II	7	2	11	20
	storms	III	1	4	1	6
		Total	8	6	13	27
	Total March counts		181	18	17	216
	Total April counts		26	32	42	100
	Total March–April		207	50	59	316

Ratio *C. garrulus*: other spp. March 4·9 : 1
April 0·35 : 1

TABLE II

Dry season, August–September
European Rollers absent. Food scarce

Date	Conditions	Sector	*C. garrulus*	*C. caudata*	*C. naevia*	Total
5.8.69	Dry.	I	0	1	0	1
	Cool	II	0	0	0	0
		III	0	0	0	0
30.8.69	Dry.	I	0	0	0	0
	Sunny	II	0	2	0	2
		III	0	0	0	0
		Total	0	3	0	3
22.8.70 & 5.9.70	So few of any species seen that counts not considered worth analysing. Even local species very scarce.					

TABLE III

End short rains, December–January
Food sometimes abundant. European Rollers present

Date	Conditions	Sector	*C. garrulus*	*C. caudata*	*C. naevia*	Total
20.12.69	Lush after	I	1	1	2	4
	good rains	II	79	5	19	103
		III	58	1	1	60
		Total	138	7	22	167
4.1.70	Dry: vegetation	I	5	1	0	6
	still long, but	II	78	2	11	91
	leaf fallen	III	117	2	0	119
		Total	200	5	11	216
	Total Dec./Jan. counts		338	12	33	383
	Total, all counts		545	65	92	702

Ratio: *C. garrulus:* other spp. Dec./Jan. 7·5 : 1
Ratio: *C. garrulus:* other spp. year round 3·5 : 1

The road was divided, mainly for convenience, but also because of ecological differences, into three sectors:—I, Kiboko–Mtito Andei (48 miles, 77km); II, Mtito–Andei–Voi (61 miles, 98 km); and III, Voi–Mackinnon Road (46 miles, 74 km). Originally, all were *Acacia-Commiphora-Adansonia* woodland with a decreasing cline eastward from about 750 to 500 mm of annual rainfall, Kiboko to Mackinnon Road. However, Sector I, the wettest, supports a fairly heavy human population and consequently a low population of elephants *Loxodonta africana*, with the result that much of the woodland, including large baobab trees *Adansonia*, survives. Sector II passes almost entirely through the Tsavo National Park, where an enormous elephant population has practically destroyed the woodland including almost all *Commiphora* and *Adansonia;* and Sector III skirts the boundary of the National Park (strictly respected by the resident elephants) so that both sides of the road are again wooded. This sector is also somewhat drier than the others, with more stunted *Commiphora* woodland. Certain other birds, for instance

the migrant Grasshopper Buzzard *Butastur rufipennis*, are common here in November–December and not elsewhere.

The resident species *C. caudata* and *C. naevia* occur the year round, but their numbers also fluctuate, indicating local movements. Slender evidence suggests that their main breeding season may be the long rains, April–May, so they should reach peak numbers in May–June. Insects and other suitable prey are then quite as, if not more abundant than they are in November–December, when *C. garrulus* is also present in far greater numbers and could compete with the residents for such food. However, *C. naevia* at least, which is the commonest resident roller in *Commiphora* woodland (*C. caudata* prefers moister areas), also becomes quite numerous in November–December and breeds in both main rainy seasons.

From the counts, however, it appears that the numbers of both species of resident rollers increase sharply between March and April, at a time when European Rollers are departing northwards and the first storms of the long rains have fallen. Their numbers approximately double between late March and late April, presumably preparatory to breeding. These rollers too are clearly nomadic or migratory, for, after breeding in the long rains, they also become very scarce in the latter part of the June–October dry season. *C. naevia*, which is the commoner species and better adapted to *Commiphora* woodland, apparently also becomes common again in the short rains November–December.

So far the evidence does not support any suggestion that a heavy population of elephants in Sector II has depressed the breeding population of resident species by depriving them of breeding sites. The total of all counts of resident species in Sector II, the worst affected by elephants is 84, cf. 52 for Sector III, and 21 for Sector 1, the woodland least affected, with abundant breeding holes in baobabs. Corrected for distance, these figures become 84, 71 and 22, still suggesting that the highest resident roller populations are in areas worst damaged by elephants.

Possibly the large numbers of dead but not yet completely rotted trees and stumps resulting from elephant damage may actually have provided more breeding holes than formerly existed, so favouring the resident rollers, of which *C. naevia* certainly also breeds in banks of streams. However, this suggestion requires further investigation.

In general it seems probable that:

(1) The total numbers of any species of roller inhabiting this thornbush is not necessarily limited by food supply. The numbers of resident rollers living in the area in April and May, when near their peak, are always very much lower than the combined total of all species present, or of European Rollers alone, from November to March. The total of all European Rollers in four December–March counts is 519 (mean 130/count), despite one very low count of eight on 31.3.70, after most of the birds had left. Without this low count the average of the other three counts would have been 170, which may be compared with 26 (mean 13) in two April counts. In other words although food, which would be relatively scarce at the end of the January–March dry season, becomes abundant again in April, the total numbers of rollers, especially of European Rollers, decrease. Those of both resident species in the same counts are 80 in December–March (mean 27) cf. 74 (mean 37) in April. Year round there are on average 3·5 European Rollers for one of any resident species while in December–March the proportion is 6·5 : 1 in favour of the European Roller. This is so despite the fact that *C. naevia* at

least is a larger and more powerful species than *C. garrulus*, killing *inter alia* snakes up to at least 50 cm long.

(ii) That the numbers of all species fluctuate greatly from year to year according to the rains and that rollers in general are more nomadic in the African tropics than is generally realised. Local movements of the Abyssinian Roller *C. abyssinica* have been related to the dry and wet seasons by Brown (1946: 194), and Elgood *et al.* (1973: 35) find all *Coracias* and *Eurystomus* rollers migratory in Nigeria. In Kenya and Ethiopia the Broad-billed Roller *Eurystomus glaucurus* is notably nomadic, coming into breeding condition and display at once with the onset of rains in, for instance, western Ethiopia. (Brown unpub.) The Somalian–Ethiopian race of the Lilac-breasted Roller, *C. c. lorti*, is certainly migratory, arriving in Ethiopia–Somalia in the early rains in March, breeding and then departing south to spend the off season in northern Kenya (Archer & Godman 1961: 704; Urban & Brown: 1971 64). Regular counts en route to the coast were discontinued after 1970, but it was noted that the numbers of European Rollers fell greatly in 1971–72, a drought year, though increased again in 1972–73, when the short rains were again good (102 seen on Sector II and III on 8.1.73).

(iii) The numbers of resident rollers may be limited by territorial behaviour rather than food supply. In April there should be strong competition for available nesting holes in trees and in banks (sometimes used by *C. naevia*) between rollers, glossy starlings, hornbills, wood-hoopoes and others. However, there is little actual evidence that shortage of holes reduces the population, rather the reverse. The European Roller in winter, on the other hand, merely has to find a suitable perch from which it can forage in a temporary feeding area, using trees, telegraph wires, termite hills and any dead stump of the type recently abundantly provided by the Tsavo elephants. It may thus be able to exploit the sometimes over-abundant available food supply in the November–March period more effectively than any breeding resident species, whose territorial requirements may be evolved to survive in dry years when food is relatively very short.

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The voice of *Sarothrura insularis* with further notes on members of the genus

by Stuart Keith

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In April, May and June, 1971, I travelled extensively in Madagascar in company with Mr. A. D. Forbes-Watson and Mr. D. A. Turner. Having previously recorded the voices of six of the African species of *Sarothrura*, I was

most anxious to hear and record the voice of *Sarothrura insularis*, endemic to Madagascar. The only information I had on its call was the description by Rand (1936: 360), and I speculated that this call might resemble one of the calls of *Sarothura rufa* (Keith, Benson & Irwin 1970: 65).

I guessed wrong. We were accompanied on part of our journey by M. Georges Randrianosolo from O.R.S.T.O.M. in Tananarive, and when he identified a mysterious call in the forest of Tsarafidy as that of *Sarothrura insularis*, I frankly didn't believe him—it didn't remotely resemble any sound I had ever heard from a *Sarothrura*. He was later proved right, however, when calling birds were seen and recorded near Didy, 25th–29th April, 1971.

The vocalisation I would like to name the "full call" lasts about 20 seconds and may be described as follows: first one or two short trilled notes are given, followed by several loud double notes, which are followed in turn by a long series of loud single notes of similar quality. These single notes gradually accelerate and at the same time decrease slightly in pitch, becoming quite faint toward the end. This is a loud, high-pitched, and ringing call capable of carrying for nearly half a mile. It may be written: "drr – drr – KEEKEE – KEEKEE – KEEKEE – KEE – KEE – KEE – KEE – KEEK – KEEK – KICK – KICK – kick – kick – kick – kick – kikikikikikikiki —— ——". This vocalisation I take to be territorial in nature and it might therefore be better described as a song (for the distinction between "song" and "call", see discussion in Keith *et al.*, *loc. cit.*: 15).

Other vocalisations of *S. insularis* are mostly either shortened versions of, or excerpts from, this full call. The introductory trill is frequently dispensed with, and sometimes the double notes are too. Sometimes there is just a short burst of notes lasting 5–10 seconds, while at other times the full call may be considerably lengthened, the bird continuing to give a series of low "kiks", unevenly spaced. This last was usually given in response to song playback, or to the call of a nearby rival, and I take it to be a grumbling "annoyance call" similar to that noted for *S. boehmi* (*loc. cit.*: 56).

Sonagrams of four vocalisations of *S. insularis* are shown in Fig. 1. Sonagrams A and B are both taken from a full call; A shows the double note followed by two single notes, while in B there is just a series of single notes. Notice that in B the notes are spaced more closely together—this is from the latter part of the call where the notes are speeded up. In A a distant bird can faintly be seen calling "over" the near one—only the upper harmonic has registered. Sonagram C shows the beginning of a short, loud call which only lasted about 10 seconds—notice there are no introductory notes, and that it very quickly accelerates and descends in pitch. Sonagram D shows a different vocalisation, not part of a full call and a "call" rather than a "song". It has a dry, slightly trilled quality and the rhythm is irregular—notice the space between the notes increases in this particular excerpt.

Of course at this stage, with limited experience, I cannot ascribe "meaning" to any of these vocalisations, except to repeat that the full call seems fairly clearly to be the territorial call or "song". At Didy the birds were very vocal—when one bird called it would frequently set off several others in the neighbourhood. I cannot say whether they were breeding or not, since we neither collected specimens nor found nests. They may not have been—this was April, and Rand (*loc. cit.*) only records breeding in September and October. However, the birds might be expected to breed during the rainy season, which lasts from November to April, so they may have been at the tail end of their breeding season during our visit (see following page).

Song playback readily elicited a response, often from several birds. Some of these were far enough apart to have been males on separate territories, while others were close enough to have been two birds of a pair. Calling by a suspected pair was similarly noted for *S. lugens* (Keith *et al.* 1970: 50) in response to song playback (see also Keith *et. al.*, *loc. cit.*: 13–15 for discussion of female rallid calls).

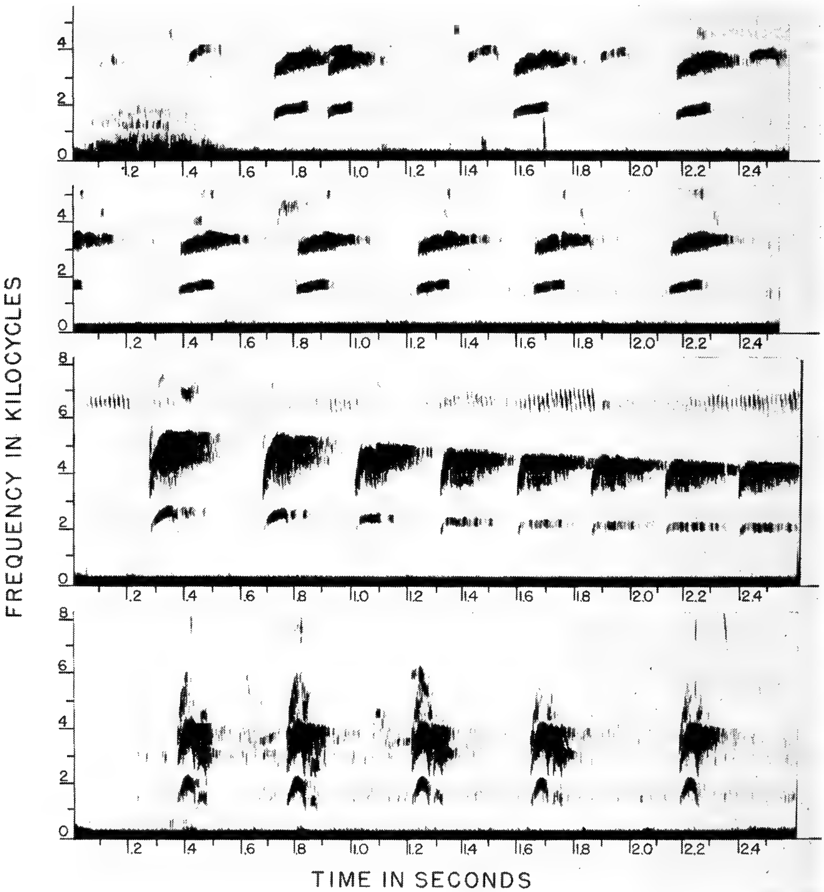

FIGURE 1. Sonagrams of vocalisations of *Sarothrura insularis*. In order from top to bottom: A, B, C, D (see text).

We may now compare the voice of *Sarothrura insularis* with the voices of other members of the genus. The voices of *ayresii* and *watersi* are still unknown, but those of the remaining six are depicted in the sonagrams in Keith *et al.* (*loc. cit.*: 12–15). It can be seen at once that *insularis* is unlike any of the others, and this is even more obvious to the human ear. The African birds have low, moaning songs and fairly low, hollow calls. The songs are

all at 1000 cycles or lower, while calls are mostly pitched around 2000 cycles, with overtones up to 3000 cycles. The calls of *insularis* are pitched at about 4000 cycles, with an undertone at 2000. The first notes in Sonagram C are at 5000 cycles, while the upper reaches in C are at 6000. To the human ear this difference sounds even greater than the sonagrams would suggest; *insularis* sounds high and ringing, the African birds low and hollow. Besides the difference in pitch, the form of the full call of *insularis* is also unique—no African bird has an accelerating, descending call.

In view of these great differences it is impossible to say to which African species *insularis* is most closely related on the basis of voice. We speculated (*loc. cit.*: 71) that on morphological grounds *affinis* and *insularis* seem so closely related as to form a superspecies. This supposed closeness is not backed up by the vocalisations, and I would prefer now to abandon this thought. *Affinis* has a low moaning song, and in fact the call of *lugens* seems the closest to that of *insularis*, although it is still very different. The vocalisations of *insularis* cannot be used as a clue to its relationships with other members of the genus; furthermore, their difference is now such that I would hesitate to class *insularis* as a member of any superspecies.

Further notes on *Sarothrura insularis*

I must here report a locality error and discuss its consequences. In our species account of *Sarothrura insularis* (Keith, Benson & Irwin 1970: 64–65) we frequently comment on the occurrence and breeding of the species at Manombo "in the subdesert". This was particularly interesting as the only evidence for the bird's occurring in this habitat.

In 1971 Messrs. Forbes-Watson, Turner and I discovered that there are two towns named Manombo in Madagascar. The principal one is located at 22° 56′ S., 43° 29′ E., on the southwest coast north of Tulear, in the subdesert. Benson, Irwin and I assumed that this was the place indicated. However, there is also a tiny settlement named Manombo at 32° 10′ S., 47° 50′ E., on the south*east* coast south of Farafangana. Whereas it is evident from the route map in Rand (1936: 147) that both Manombos were visited by his expedition, the locality he gives (*loc. cit.*: 360) for the two nests he discovered is "Manombo (*southeast*)" (italics mine). They are further described as being "in a grassy field near the forest". This is the normal habitat for the species, and all our remarks based on its occurrence at Manombo in the subdesert (a most unlikely habitat) must now be revised.

Rand (*loc. cit.*: 360) gives the habitat of the species as "the secondary brush, the grassland on the edge of the forest, and the little clearings in the forest". We can now add marshes to this list of habitats. At our campsite a few km north of Didy (about 35 km south-southeast of Ambatondrazaka), while some birds inhabited the forest edge, a larger number were living in the open marsh nearby. This is an extensive flat area of long grass, reeds and sedge inhabited by such species as *Rallus madagascariensis*, *Dryolimnas cuvieri* and *Calamocichla newtoni*. The birds were frequently seen scuttling across the track which crosses the marsh, and many more called from the marsh than from the woods. We did however also see an adult male and a fully-grown young male, the latter with a rufous wash already appearing on the forehead and chin, walking on the forest floor a few hundred yards from the marsh. Like many species in Madagascar, *Sarothrura insularis* is clearly tolerant of a variety of habitats. This further confirms my supposition (see above) that the birds had about finished breeding at the time of our visit.

Notes on other members of the genus

Sarothrura elegans

An adult male was collected at Koobi Fora on Lake Rudolf, Kenya, (3° 55′ N., 36° 10′ E.) by A. Duff-McKay and R. E. Leakey on 26th April, 1971. Details were given by Duff-McKay to A. D. Forbes-Watson in Nairobi and then sent to me. Koobi Fora is a very dry locality with almost no ground cover—scrubby bushes and small trees. Near the lake shore, where the bird was collected, there is a sparse covering of "ouch ! grass", and about one km from the collecting point there are extensive reed beds on the shore of the lake. When collected the bird was hiding in the thatched roof of a small hut, where it had apparently been seen on the two previous days. Duff-McKay further reports that Mrs. R. E. Leakey had seen "some" a week or so before running around in the "ouch ! grass".

This is a most interesting record. The normal range of the species in eastern Africa is from Cape Province, South Africa north to central Kenya and southern Sudan. There are only four records from north and east of this range: a female from Somalia (the type of "*S. buryi*"); a male from south-central Ethiopia (Roux & Benson 1969), and two aural records: Benson (1947: 49) heard the call near Mega, southern Ethiopia, and I taped the song of a bird at Mt. Marsabit, northern Kenya. Koobi Fora, on the shore of Lake Rudolf at its northeastern end, is about 160 miles northwest of Marsabit and 140 miles west of Mega, these being the two nearest recorded localities. While perhaps not strictly being a range extension, Koobi Fora being south of a line drawn between the localities in Somalia and southern Sudan where the bird has been taken, this certainly adds an interesting locality to its sparsely documented range in northeastern Africa, and is only the third specimen for the area, and the second male.

Perhaps of even greater interest is the question, what were the birds doing there? This is a most unusual habitat for the species. Whereas *S. elegans* is tolerant of a variety of habitats, including forest, scrub, long grass and bush near forest, and even overgrown cultivation, it is always associated with thick, often impenetrable vegetation. It is therefore most surprising to find birds running around in dry grass in semidesert country. Benson's bird from Mega was in juniper woods, the bird from near Shashamane, south-central Ethiopia, was taken in the undergrowth of a degraded *Podocarpus* forest, and my bird at Marsabit was in montane forest—all within the range of typical habitats. The only bird taken in habitat which sounds similar to that at Lake Rudolf is the unique specimen from Somalia, which according to Archer & Godman (1937: 334) was collected at the foot of the Wagar Mountains at 700 ft. around hot springs in desolate country. Is it possible that there is a population of *S. elegans* in northeastern Africa which has adapted to living in waterside habitats in semi-arid country? Only further field work will tell. The condition of the gonads of the Koobi Fora bird was not noted, but elsewhere in Kenya males in breeding condition have been taken in February, April and May, so the presence of birds at Lake Rudolf in April might indicate breeding.

The only other possibility is that the birds were on migration. There are two objections to this idea, however. First, *S. elegans* is not known to be a migrant elsewhere in its range, at least not a long-distance migrant. A few occurrences suggest local movement (summarised in Keith *et al.* 1970: 33–34) but most birds are sedentary and many probably live in the same locality year-round, in common with almost all African forest birds. Secondly,

supposing these birds were migrants, where could they have been migrating from and to? Why would birds leave their forest habitat in southern Ethiopia, southern Sudan, or northern Kenya and cross hundreds of miles of desert to reach a different country? There is no reason to suppose that any of the above places becomes inhospitable at any time of year, nor do the birds have any rallid competitors in these places. Until further evidence is forthcoming, the status of the birds at Lake Rudolf must remain a mystery.

I compared the Rudolf specimen with birds in the American Museum of Natural History from southern Africa belonging to the nominate race and it agrees with them on colour. With a wing of 95 mm, however, it is the longest winged specimen on record. We list (*loc. cit.*: 37) the wing measurements of all specimens we could find, and the wing range of males is 80–94, females 84–93 mm. Its other measurements (culmen 16, tarsus 25, middle toe 30 mm) fall within the ranges for males. The long wing might perhaps indicate a disposition to migrate.

My associates Benson, Irwin and I are indebted to Mr. Terence Oatley for drawing our attention to two points arising from our paper (Keith *et al.* 1970). On p. 40 we mention the nest of *Sarothrura rufa* found by Pooley (1962: 45) on the Usutu River in Zululand. Oatley writes (*in litt.* to Irwin) "from the habitat and calls described by Pooley this was a genuine *Sarothrura* all right but almost certainly *elegans*. The greenish tinged eggs were probably white but so described because of the green cast of the light in the dense forest understorey".

Secondly, Oatley notes a point of geographical synonymy on p. 33. Under "Movements" we cite two records by Astley Maberly, one from "the foothills of the northern Drakensburg" and the second from "the northeastern Transvaal". These, Oatley tells us, are one and the same place.

We are likewise indebted to the Rev. Dr. William Serle for pointing out to us (*in litt.* to Benson) that the precise type locality of *Sarothrura elegans reichenovi* (Sharpe) is known to be Buea, ex-British Cameroons. We had stated (p. 36) that the precise type locality was not known, but Serle drew our attention to a paper by Reichenow (1892) dealing with a collection of birds made Dr. Preuss in the Cameroons, from which Sharpe's type was taken. *S. elegans* appears on p. 178, and it is evident that the collecting locality is Buea at 950 m altitude.

Sarothrura pulchra

With regard to the call of this species, Serle (*in litt.* to Benson) says that on two occasions his African skinner Gilbert shot female birds while calling. The call of the female "resembled that of the male but was not nearly so loud, was higher pitched, and the notes followed each other so closely that it was almost like a trill and the whole performance occupied a shorter time than the usual male sextuplicated call". Gilbert also believes that the female also has a call just like that of the male. This is most welcome supporting evidence for the view that female rails call as well as males.

It is now known that *Sarothrura* is one of those rallid genera in which the primaries are moulted alternatively rather than simultaneously (*vide* e.g. Stresemann & Stresemann 1966). Since, however, there are not very many collected specimens of *Sarothrura* in moult, it may be worth mentioning a further specimen. Mortensen (1971), writing on a collection of birds from Liberia and Guinea, describes (p. 116) a male *S. pulchra* with one primary half grown which was shot on a nest with two eggs.

Acknowledgements

I would like to thank my co-authors of the *Sarothrura* monograph, Messrs. C. W. Benson and M. P. Stuart Irwin, for many helpful suggestions, and the three of us are grateful to Mr. T. Oatley and the Rev. Dr. W. Serle for allowing the information they supplied us with to be included in this paper. I would also like to acknowledge the help of my colleagues Messrs. Forbes-Watson and Turner in tracking down and identifying the voices of *Sarothrura insularis*, and the three of us are likewise grateful to M. Georges Randrianosolo for pointing out the call of the bird and helping us find it. We would also like to thank M. Roederer, Director of O.R.S.T.O.M., for permitting M. Randrianosolo to accompany us in Madagascar.

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The six hundred and eighty-fourth meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday, 18th September 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E., present 23 members and 22 guests

The speaker was Dr. Leslie H. Brown, O.B.E., B.SC., who addressed the Club on British Birds of Prey. The following is a précis of his address:—Despite legislative and educational measures of recent decades, our diurnal raptor fauna still strikes a visitor from Africa as impoverished and threatened. Of the 25 species, nine are vagrants, of which three (Sea Eagle, Black Kite, Red-footed Falcon) could conceivably some day stay to breed. Another two are boreal migrants, which although fairly regular are unlikely to do so (Gyrfalcon, Rough-legged Buzzard). Of the remaining 14 breeding species, four are represented by under 10 pairs (Honey Buzzard, Marsh Harrier, Osprey, Goshawk—the first two limited by ecological factors). There are 10–50 pairs of Red Kite and Montagu's Harrier, 50–100 of Hobby, and 100–500 of Hen Harrier, Golden Eagle, Merlin and Peregrine. This leaves only three species with populations exceeding 500 pairs and reasonably common, especially in the west where agricultural pesticides and gamekeepers, mainly pesticides, but even more so gamekeepers, are less prevalently hostile to Kestrel, Sparrowhawk and Buzzard respectively.

Notwithstanding some successes (Hen Harrier, Osprey, Red Kite)—none of them unmarred by human interference—the conservation picture is black. Thus, since 1960, the Golden Eagle has continued its decline: now, out of about 280 pairs, 220 breed but 80–90 of them fail through persecution by gamekeepers and shepherds, casual disturbance, egg-collecting and other causes, in descending order of importance. The proportional loss is far higher—reducing breeding success, for example, from 0·83 to 0·56 per pair *per annum*—than that resulting from the much publicized eagle-shoots in America, which accounted at most for 2·5% of a population conservatively estimated at 50–100,000.

The speaker emphasized the view that gamekeeping (for which landowners should bear a full share of responsibility) remains the major threat, though other factors discussed were poisons and pesticides, disturbance (the disappearance of 5–16 pairs of eagles in Deeside in the last 12 years was attributed to this cause), habitat destruction, ecological limitations, and "unknown" (Merlin). It followed that, while pesticide monitoring and research, behavioural research (of which the needs and opportunities were far from fully appreciated and exploited, particularly in the case of such species as Merlin and such subjects as food and breeding success, even of Buzzard and Kestrel), extension of reserves, and possibly reintroductions, are all necessary and desirable, their success depends on a much more effective reformation of attitudes and above all law-enforcement than anything yet achieved.

The juvenile plumage of *Pseudhirundo griseopyga* and identity of "Vom Swallows"

by C. H. Fry

Received 17th August, 1973

In his paper on the African swallow *Pseudhirundo* (*Hirundo*) *griseopyga* (Sundevall), Dowsett (1972) referred to two peculiar hirundines netted and released alive by Dr. J. R. Lang at Vom (9°50'N., 8°50'E.) in central Nigeria on 20th March 1968. Colour photographs and measurements showed them to resemble *P. griseopyga*, a small swallow with dark brown crown, glossy blue-black back, and greyish rump, but there were some distinctive plumage differences. The opinion had previously gained wide currency that they might represent a new species, although Dowsett thought they would prove to be some form of *griseopyga*.

On 26th April 1973 Dr. Lang netted three further "Vom swallows" and he is certain that they are the same as the 1968 birds. I have examined the three in the flesh at the British Museum (Natural History) and there is no doubt that they are juvenile *P. griseopyga*, vindicating Dowsett's judgement. The uncertainty arose in the first place because the juvenile plumage, which differs markedly from the adult, is not at all adequately described in any of the standard African texts, despite there being already a few juvenile skins at the Museum. A full description is being published in the Bulletin of the Nigerian Ornithologists' Society, and the salient details are as follows:— Mantle, scapulars and flight feathers brown, entirely lacking the adults' strong blue gloss (two specimens) or with blue gloss discernible only on close inspection (one specimen); rump feathers grey-brown with 2 mm wide pale fawn tips; marked superciliary stripe formed by narrow (< 1mm) whitish tips and edges to feathers at sides of crown, the stripe broadening behind the eye and even extending onto the nape and in strong contrast with the mask formed by black-brown lores and ear coverts; pale buffy tips to secondaries, inner primaries and greater wing coverts; tail notch about 25 mm deep (up to 59 mm in adult).

Thus in the field juvenile *P. griseopyga* will somewhat resemble a fork-tailed *Riparia:* a small hirundine with mid brown upperparts with paler rump, and black mask contrasting with white superciliary stripe and white underparts.

At close range the juvenile appears scaly, owing to the more or less narrow buffy edges to its brown feathers. This applies also to adults in fresh plumage, since at all moults newly-grown feathers are narrowly buff edged. The pale tips probably abrade away rapidly. In addition both juveniles and adults have a salmon-pink wash on the freshly-grown white feathers of the chin, throat and breast. This colour also seems to disappear soon; a Nigerian nestling near to fledging on 9th May (B.M. reg. no. 1955.59.159) is pink below, while neither the Vom specimens nor one of the same age and season (9th April) from further north in Nigeria show any pink (B.M. reg. no. 1933.8.2.27.1). Adult *P. g. melbina* from Liberia and *P. g. gertrudis* from Nigeria and Cameroun have warm buff- or salmon-pink chins and throats when freshly moulted in August, but September and later skins are without any pink.

The residential status of *P. griseopyga* in Nigeria has been discussed by Elgood, Fry & Dowsett (1973) and little can be added on the strength of the

Vom records. If it breeds on the Jos Plateau, on which Vom is situated at 1,310 m, it must do so extremely sparsely since in 14 years Dr. Lang has seen none other than those netted. It may be significant that, as Dr. Lang reports, there was a small migratory movement at Vom when the 1973 birds were netted, with Palaearctic passerines and the first plateau record of *Turnix nana* on the same day. The swallows, which I consider had fledged within four weeks, may have been migrants dispersing northward from Niger-Benue breeding grounds (Bannerman 1953).

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A new race of Thekla Lark in Harrar, Ethiopia

by C. Erard & G. Jarry

Received 21st August, 1973

In classifying the specimens recently brought back from Ethiopia by various expeditions from the Laboratoire de Zoologie (Mammifères et Oiseaux) du Muséum National d'Histoire Naturelle de Paris, we noticed three Thekla Larks from Harrar which at once seemed to us peculiar. These three specimens have been compared by one of us (C.E.) with the extensive material in the British Museum (Natural History). We thank Dr. D. W. Snow and I. C. J. Galbraith for facilities provided and C. W. Benson who translated our paper. These birds seem to us sufficiently homogeneous and distinct from other races of *Galerida theklae* to require their own name. Accordingly we propose:

Galerida theklae harrarensis, subsp. nov.

Description: This new form has no close resemblance to the populations of the high plateaus of Ethiopia attached to *praetermissa* (Blanford), the colour of which is very dark, especially the reddish fawn underparts. It is akin to *ellioti* Hartert of Somalia, from which it is nevertheless easily distinguishable. *Harrarensis* is in effect darker, less sandy: the streaks on the back are clearly of a brown which is more blackish in tone, these dark centres to the feathers being wider and much better defined. Below, the pectoral streaks are heavier. Finally, an important character, the bill of *harrarensis* is shorter than that of *ellioti*, and it is also clearly finer.

These specimens have also been compared with *G. t. huriensis* Benson of northern Kenya. Six specimens of the latter in worn plumage, comparable in this respect to our specimens, are very easily distinguished by their darker colour. The mantle of *harrarensis* is less densely streaked, the dark centres of the feathers being narrower. The feathers of the rump and upper-tail coverts are of an almost uniform pinkish brown contrasting with the rest of the upperparts, whereas in *huriensis* the rump and upper-tail coverts are merely fringed with a brown of a reddish rather than a pinkish tone and the centre

is dark brown. Below, *huriensis* is more streaked on the chest, the markings being particularly large and densely distributed. Furthermore, *huriensis* has the bill longer and stouter, and has much less light fawn on the outer rectrices.

Distribution: At present *harrarensis* is only known from three specimens collected in the north of the province of Harrar on 18th March 1971: ♂, 5 km west of Jigjigga (9°21′N, 42°46′E), altitude 1,700 m; ♂♀, 32 km south-east of Jigjigga (9°14′N, 43°02′E), altitude 1,550 m. The first one was obtained in a steppe of low acacia bushes scattered over stony ground; the other two in an analogous habitat but much more rocky owing to the presence of the bed of a dry wadi. At these two localities, and in between, this form was relatively common. It did not appear to be breeding at this time.

Type: ♂ adult, 5 km west of Jigjigga, 18th March 1971. Collectors' no: 2,794. In Muséum National d'Histoire Naturelle, Paris.

Measurements of type: Wing 101, tail 57, bill (from skull) 14·5, hind-claw 11 mm.

Measurements of material as a whole: The following is a summary of measurements, of material all of the same degree of wear of plumage:

	Wing	*Tail*	*Bill from skull*	*Hind-claw*
		G. t. harrarensis		
2 ♂♂	100, 101	55, 57	14·5 (both)	10·5, 11
♀	93	52	14·5	11
		G. t. ellioti		
7 ♂♂	99–103·5	51–60	14·5–17·5	8–12
av.	101·8	56·5	15·7	9·9
		G. t. huriensis		
5 ♂♂	97–101	51·5–60·5	15–17	11·5–15
av.	99·1	56·0	16·1	12·2

The type of *harrarensis* weighed 30 g; the male from 32 km south-east of Jigjigga 32 g, the female therefrom 31g.

Remarks: Urban & Brown (1971: 71) record only *G. t. praetermissa* and *huriensis* from Ethiopia. The latter should strictly speaking only figure in an inventory of the birds of Ethiopia as "probable". It has never been collected or recorded within Ethiopia, although Benson (1945) obtained his specimens only five miles south of the frontier with Kenya but never met with the species during his important investigations in Sidamo. Urban & Brown do not record *G. t. ellioti*. In this respect they follow White (1961: 50), who records this race only from the interior of British Somaliland south to Galkayu and Merca in Italian Somalia. Now, the type-locality of *ellioti* is Daghabur (8°11′N, 43°31′E), which is in the Ethiopian part of the Ogaden, that is to say, in the south of the province of Harrar. Thus it is right to admit this form to the list of the birds of Ethiopia and to investigate its exact distribution in the Ogaden.

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A new race of Thekla Lark in Bale, Ethiopia

by C. Erard & R. de Naurois

Received 21st August, 1973

A study by one of us (R.N.), on the evolution of larks of the genus *Galerida*, led us to consider jointly the populations of *G. theklae* of the high plateaus of Ethiopia, until now considered as constituting the subspecies *praetermissa* (Blanford). Accordingly we have examined the material brought back by recent expeditions to Ethiopia organised by the Laboratoire de Zoologie (Mammifères et Oiseaux) du Muséum National d'Histoire Naturelle de Paris and that housed in the collections of the British Museum (Natural History). It is apparent to us that the birds of Bale are distinguishable from those from other high plateaus of Ethiopia, from which they are separated by the Rift Valley. They seem to constitute a discrete form, which we propose to call, in memory of our friend the late François Hüe:

Galerida theklae huei, subsp. nov.

Description: This form has no close resemblance to *G. t. ellioti* Hartert or *G. t. harrarensis* Erard & Jarry (see immediately above), which are light coloured with a pronounced sandy tone. It is however near to *G. t. praetermissa* and *huriensis* Benson. In comparison with these two races, *huei* has the streaking of the upperparts distinctly blacker and more intense (in worn plumage, the back and the top of the head appear almost uniformly black). The pale borders of the feathers of the mantle are narrower and lighter, more creamy or very light buff, less pinkish brown, this being particularly clear on the neck, where there is the outline of a pale band. The cheeks are likewise more intensely streaked than in *praetermissa*. On the underparts *huei* is white, very slightly washed with light buff as in *huriensis*, whereas *praetermissa* is a dark pinky brown, only rarely pale in colour. The streaking of the chest, of a much less heavy aspect than in *huriensis*, is similar to that of *praetermissa*, but the streaks are heavier and more densely distributed. The throat is white as in *huriensis* but much less streaked; in *praetermissa* the throat is buffy. The beak of *huei* is intermediate between that of *praetermissa* (long and slender) and that of *huriensis* (long and stout).

Distribution: G. t. huei inhabits the mountains of Bale where it has been collected at Dinsho (7°06'N, 39°47'E) at an altitude of 3,200 m, and where the species is relatively common, inhabiting steppes and plains of a medium altitude (cf. Dorst & Roux 1972: 208).

We likewise attribute to *huei*, although not identical in all characters, two specimens collected on 28th February 1971 at Asella (7°58'N, 39°04'E), in Arussi, at an altitude of 2,640 m, on the edge of degraded forest intersected by cultivation. They are in fresh plumage, with a very dark pigmentation, although the edges of the feathers of the mantle are more like those in *praetermissa* (that is, more pinkish brown) of the Addis Ababa plateau. On the other hand, the underparts are much as in *huei*. The measurements of these two specimens are included below with those of that form.

It is probably also *huei* which Dorst & Roux (1973) found well represented at Koffole (7°05'N, 38°45'E), in Arussi, on arid steppes at an altitude of 2,550 m.

Type: ♂ adult, Dinsho, 14th March 1968, specimen no. 24 collected by party composed of Prof. J. Dorst, F. Roux and J. Chauvency. In Muséum National d'Histoire Naturelle, Paris.

Measurements and weight of type: Wing 103, tail 54·5, bill (from skull) 17·5, hind-claw 11·5 mm. Weight 34 g.

Measurements and weights of material as a whole: We compare below only *praetermissa* and *huei*; for data for *huriensis*, *ellioti* and *harrarensis*, the other races recorded from Ethiopia, see Erard & Jarry above. The three items indicate respectively mean, range and number of specimens examined.

	Wing	*Tail*	*Bill from skull*	*Hind-claw*	*Weight*
			millimetres		grammes
			G. t. praetermissa		
♂♂	101·7	55·7	16·6	13·5	35·2
	97·5 – 107·5	49·5 – 60	15·5 – 17·5	11 – 16·5	32 – 39
	21	20	20	19	14
♀♀	95·3	51·2	16·1	13·1	34·0
	91 – 99	48 – 54	15 – 17·5	11 – 15·5	30 – 36
	5	5	5	5	3
			G. t. huei		
♂♂	103·7	54·6	17·0	13·5	35·0
	101 – 107	52·5 – 57·5	16 – 18	11·5 – 15	34 – 37
	4	4	4	4	4
♀♀	96·5	51·0	—	14·3	33·3
	95·5 – 97	50 – 52·5	15	12 – 16·5	32 – 34
	3	3	1	3	3

Remarks: The existence of this dark form *huei* was foreseen by Friedmann (1937: 31), who remarked that the birds collected by the Childs Frick Expedition on the plateau of Arussi were blacker on the back and head than those of Shoa and that they "may represent an undescribed form". Friedmann refrained from naming it, not knowing the extent of individual variation in *praetermissa*; this all the more because Blanford (1870: 381) had named "*A.* (*G.*) *arenicola*? Tristram, var. *fusca*" a very dark specimen obtained at Ashangi (12°35′N, 39°39′E). It seems to us that *praetermissa* does show a certain variation in intensity of pigmentation. But in spite of an examination of the long series in the British Museum we have not found in this form any individual as dark and showing the characters such as we have given in the definition of *huei*.

Three specimens from the vicinity of Ambo (8°57′N, 37°58′E) collected in October 1971 between 2,200 and 2,400 m in altitude show a slight approach to *huei*. However, a careful examination shows that they are pale below, the pectoral striation is of the *praetermissa* type, being narrower and more diffuse than in *huei*, the throat is washed with light buffy, the upperparts are certainly dark but not to the extent found in *huei*, while the pale margins to the feathers of the mantle do not accord with this latter but rather with those in *praetermissa*.

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A new race of Pectoral-patch Cisticola from Cameroun

by C. Chappuis & C. Erard

Received 21st August, 1973

During a scientific journey which took us from Tchad to Gabon, we had the opportunity in October 1972 to traverse the montane area of Adamaoua in central Cameroun. On 17th October, in the area of the Mbangi mountains (see Plate 90 in Bartholomew 1956), at 40 km north of Ngaoundere (*ca.* 7°45′N, 13°25′E) and altitude 1,400 m, we discovered a population of the Pectoral-patch Cisticola *Cisticola brunnescens* Heuglin on a plateau covered with meadows consisting of very short grass on stony ground, and strewn with strands of small area of bushes, relatively little crowded, meagre and low (height 0·80 to 1 m). This bushy vegetation was more luxurious in hollows and drainage lines, developing into shrubs (height 2 to 3 m).

The Pectoral-patch Cisticolas were frequenting the low tufts and thinly scattered bushes on the edges of the meadows. This habitat differed from that known to one of us (C.E.) in Ethiopia, where *brunnescens* inhabits humid meadows with grass of a height of 0·30 to 1 m. It would seem that in this Adamaoua locality, the grass being so short, the birds were associated rather

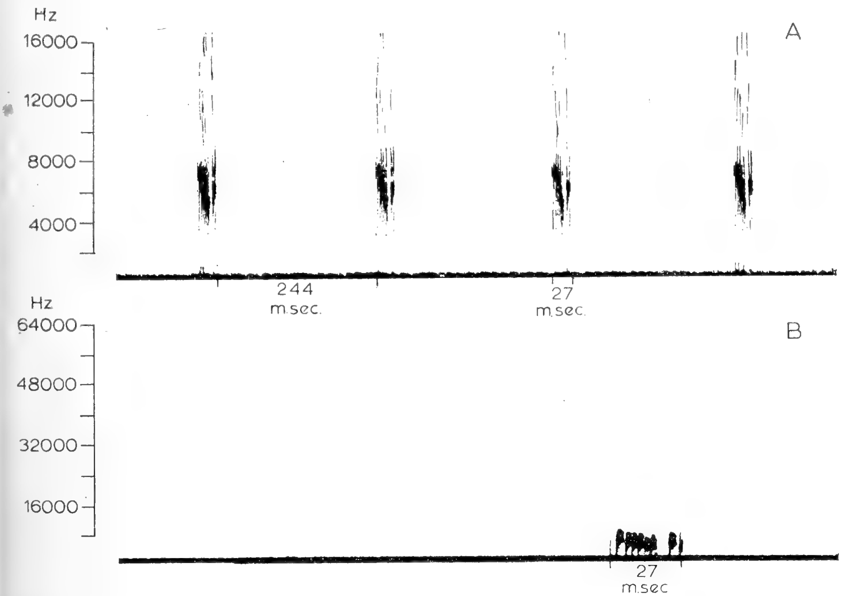

Figure 1. Song in flight of *Cisticola brunnescens mbangensis*. A: Sonagram on standard scale, 160 – 16000 Hz. B: The same reduced to quarter speed of A to show distribution of energy in band 5000 – 7000 Hz. (Sonagrams made with wide band-path filter).

with the bushy formations. It may be noted that in the highlands of Bamenda (5°55′N, 10°10′E), in ex-British Cameroun (now part of Nigeria), where the form *C. b. lynesi* Bates occurs, the species inhabits (according to the labels of

specimens in the British Museum, collectors Admiral H. Lynes and the Rev. Dr. W. Serle), certainly "moorland" and "open grassy flats" but also "bare hills with small shrubs and no new grass yet", this latter biotope resembling that in which we found it. The males were singing, at intervals from one another of 100 to 150 m. The song—apparently like that of the nominate race of the Ethiopian plateaus—was performed either in flight (the most usual) or from the top of a small bush: see sonagrams in Fig. 1. In this habitat, *Macronyx croceus* and *Galerida* (=*Heliocorys*) *modesta* were common; *Myrmecocichla nigra* and *Francolinus bicalcaratus* were seen; while in the neighbouring zone of high bushes the dominant species were *Prinia subflava*, *Cisticola brachyptera*, *C. natalensis*, *Nectarinia cuprea*, *Tchagra senegala* and *Serinus mozambicus*.

Three males collected (at the finish of reproductive activity: testes 3 mm long) have been compared with the important material in the British Museum at Tring. It appears that this population of Adamaoua is sufficiently distinct from the other races of the species to require a name. So we propose:

Cisticola brunnescens mbangensis, subsp. nov.

Description: Our specimens are in very worn nuptial plumage, but nevertheless are at once distinguishable from the other races in the same plumage. They resemble most closely *lynesi* Bates of the highlands of Bamenda, the only area not far from Cameroun where the species is so far known (White 1962: 683). They differ in their smaller size: see measurements below. The general coloration is lighter. The streaking of the upperparts is less intense, these markings being narrower and in particular more brownish, less blackish. The crown is more rusty, not hazel. The rump contrasts with the mantle and is a bright and dark rusty maroon, lacking the yellowish tone of *lynesi*. Although very worn, the edges of the feathers of the mantle and the wing-coverts appear more yellowish, less reddish.

Distribution: So far only known from the type locality in the highlands of Adamaoua, Cameroun.

Type: ♂ adult, Adamaoua, 17th October 1972, collected by the authors, their no. 22. In Muséum National d'Histoire Naturelle, Paris (wing 50, tail 25·5, bill from skull 10 mm).

Measurements: The following are comparative measurements of the new race and eight males in breeding dress from the highlands of Bamenda:

	Wing	*Tail*	*Bill from skull*
		C. b. lynesi	
8 ♂♂	51 – 54 (52·4)	26 – 31 (28·9)	11 – 11·5 (11·2)
		C. b. mbangensis	
3 ♂♂	49 – 50 (49·5)	24 – 26 (25·1)	10 – 10·5 (10·1)

Acknowledgements: We are grateful to Dr. D. W. Snow and I. C. J. Galbraith for making us welcome in the bird room at Tring and for the loan of specimens. We are likewise thankful to C. W. Benson for translating our text into English, and also to Mrs. J. Hall-Craggs for assistance in its finalisation.

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The biology and a new subspecies of *Monticola sharpei*

by T. Farkas

Received 29th May, 1973

INTRODUCTION

The uncertainty about the generic and specific status of rock-thrushes in Madagascar has been discussed by Goodwin (1956). I worked in the field, in the breeding areas of these birds, from October 1969 to January 1970, as a result of which I was able to ascertain new details of various aspects of their biology. These details, preceded by an examination of specimens in the American Museum of Natural History, New York, support the suggestion of Salomonsen (1934), Goodwin (1956) and (recently) Hall & Moreau (1970) that the species concerned should be placed in the genus *Monticola*. Indeed this had been suggested much earlier by Milne-Edwards & Grandidier (1879: 367), using the name *Petrocincla* instead of *Monticola*. I (Farkas 1971) have already discussed *Monticola bensoni* Farkas, and I will do the same for *M. imerina* (Hartlaub) in due course. The subject of the present paper is the more complicated case of *M. sharpei* (Gray), which I studied in the field as follows:—Mt. d'Ambre, 3rd November/3rd December; Périnet, 9th–22nd December; Ankaratra Mts., 27th December/2nd January.

A NEW SUBSPECIES

There are several features indicating that there are three clear-cut subspecies. For clarification I now refer only to geographical distribution and to differences in colour-pattern in adult males. Firstly, in the *highland* race the slate-blue extends from the throat to the lower part of the breast, while in the *lowland* and *northern* (Mt. d'Ambre) races this colour does not extend below the throat. Secondly, the margins of the remiges and wing-coverts are rufous in the northern race; likewise in the lowland race, except that the primaries are grey-edged; while in the highland race there are no rufous margins except for the secondaries, which are pale rufous-edged. Thirdly, the bright rufous rectrices are only narrowly dark-tipped in the northern race, whereas in the other two these tips are broader, and the dark colour extends along the outer webs of the outermost pair. Furthermore, the northern race has a "super-rufous" phase in which the dark tips are reduced still more or even absent, and irregular red spots may even be apparent on the dark central pair of rectrices. Finally, in the lowland race some males have a very pale, almost whitish patch on the chin (Plate 1), strongly reminiscent of the patch occurring regularly in the male of *M. gularis* (Swinhoe) of eastern Asia.

Sharpe (1871, as *Cosspyha imerina*) described an adult male collected by A. Crossley, hinting however that it might differ from the form described by Hartlaub (1860), now known as *M. imerina* (Hartlaub). Thereupon Gray (1871) designated a new species, which is now *M. sharpei* (Gray) (in the References below, note the misleading title of Gray's paper, since he described a new species of "*Cossypha*" as well as of *Caprimulgus*). There is nothing in Sharpe's description to indicate that the adult male which he had before him does not belong to the highland race, i.e. that it has grey-edged wing-coverts and primaries, and a slate-blue breast as well as throat. The specimen is in the British Museum (Natural History), and has been examined at my request by C. W. Benson, who confirms accordingly. It is the one listed by

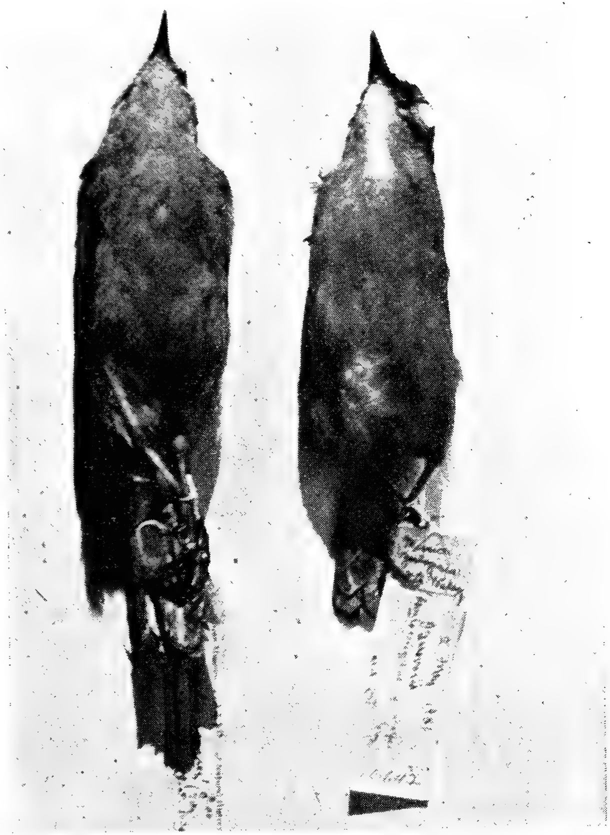

Plate 1. *Monticola sharpei salomonseni*, adult males; left, blue-chinned (normal), right, white-chinned (specimens in A.M.N.H.). By author.

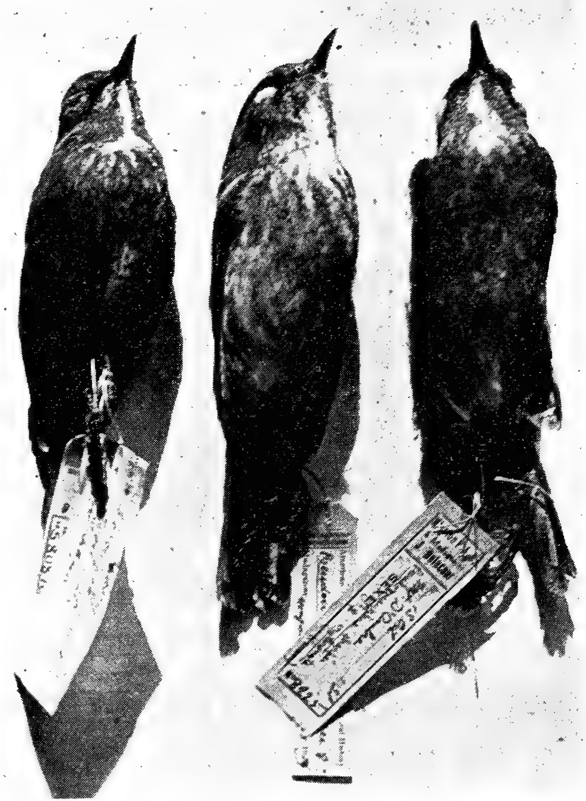

Plate 2. *Monticola sharpei*, adult females; left to right, *salomonseni*, nominate *sharpei*, *erythronotus* (specimens in A.M.N.H.). By author.

Warren & Harrison (1971) as a syntype of "*Cossypha sharpei* G. R. Gray, 1871" (*sic*), the other two syntypes doubtless being the two specimens regarded by Sharpe (1871) as young. The size of this specimen had already aroused the suspicion of Salomonsen (1934). He refers to it as "exceptionally big", with a wing-length of 82, as against 75–78 mm in "eight other males from Sianaka". Benson has also made its wing-length to be 82 mm. Thus this specimen belongs to the blue-breasted, grey-winged, large highland race, the correct name of which is therefore *Monticola sharpei sharpei* (Gray). Salomonsen (1934) overlooked this, and re-described the highland race as *M. imerina interioris*, which is accordingly a synonym of *M. s. sharpei*. Consequently the small lowland race is in need of a name and description:—

Monticola sharpei salomonseni, subsp. nov.

Type: ♂ adult, collected in May 1929, Sianaka forest, eastern Madagascar. In American Museum of Natural History, registered number 412287.

Measurements of type: Wing 71, tail 53, culmen (from rhamphotheca) 11, tarsus 24 mm.

Description: The adult male of *salomonseni* differs in colour from that of nominate *sharpei* in that the slate-blue of the throat does not extend onto the breast, and only the primaries have grey edges on their outer webs, the wing-coverts and secondaries being rufous-edged. *Salmonseni* is a very small form, indeed the smallest in the genus as a whole. For further detailed wing-measurements, see Salomonsen (1934, in which *sharpei* = *salomonseni*, *interioris* = *sharpei*). The tail seems disproportionately short; thus 47–59, av. 54·8 mm, in 12 males in the A.M.N.H.

By contrast, the adult female is little more than a small version of that of *M. s. erythronotus* (Lavauden), although with the strong rufous tints of this northern (Mt. d'Ambre) race relatively subdued. Yet the most distinctive feature is the white gular patch, reaching to the lower mandible, and edged by a dark malar stripe. This patch is less marked in the other two races (Plate 2). The underparts are pale brownish with a rufous tint, darkest on the breast and its sides, where there are oblong buff spots with dark, thin edges, diminishing downwards and replaced on the abdomen by narrow, dark apical tips to the feathers, giving a scaly appearance. The upperparts are plain dark olive with some red tinge, the wings similar but paler. The two central rectrices are dark olive with very fine, dark cross-bars, the others lighter with some rufous tinge, with a few irregularly shaped, pale rufous spots. Such spots and the rufous tinge are less developed in the nominate race, but more so in *erythronotus*, *salomonseni* thus being intermediate in this respect.

Distribution: Salomonseni occupies the eastern lowland primeval forests, down to sea-level around the Baie d'Antongil, and intergrades at higher altitudes with the nominate race. An adult male which I measured (wing 77, tail 57, culmen 13, tarsus 25 mm), in the museum of the Office de Recherche Scientifique et Technique Outre-Mer (O.R.S.T.O.M.), Tananarive, seems intermediate. It was collected in 1924 at Bejofo-Bealanana, *ca.* 14°30′S., 48°45′E. The nominate, highland race occupies the Ankaratra Mts., and high ground on the central ridge of Madagascar to the north and south. Georges Randrianasolo (pers. comm.) has recently collected it in the forest patches of the Ankazobe Mts. (north-west of Tananarive), and Benson in the Massif de l'Itremo, west of Ambositra (two females, one adult, wings 79, one juvenile, wings 80 mm, 10/11 January). Salomonsen (1934) suggests that the type-specimen of *sharpei* (that is, the syntype listed by Warren & Harrison

1971) came from somewhere in the Sianaka forest. In fact, as Benson corroborates, it is merely labelled "Madagascar". But it can be presumed that it was collected at a higher altitude west of the Sianaka forest, perhaps in the mountains west of Moromanga, or still further west and higher.

At present *erythronotus* is only known from Mt. d'Ambre, in the northernmost tip of Madagascar. But it may intergrade to the southward with the nominate race. According to Randrianasolo, during an O.R.S.T.O.M. expedition in November 1966 to the Massif du Tsaratanana, led by R. Albignac, an adult male of an unknown race of *M. sharpei* was collected at a nest with two well developed young. The site was at an altitude of 2,050 m, in light forest with many bamboos in the undergrowth, the nest being 1·5 m up on a moss-covered rock. This specimen is in the collection of Col. Ph. Milon, and still awaits determination. It could be an intermediate.

HABITAT PREFERENCE, GENERAL HABITS

In the Ankaratra Mts., from the lower edge of the primeval forests up to 2,000 m, near the summit, *M. sharpei* is common under the dense and high canopy wherever there is little or no undergrowth. The floor is thickly covered with fallen leaves and debris, in damper places with a cushion of moss. In clearings or less dense parts of the forests there is a high and lush shrubbery, unsuited to the species. In fact the birds prefer the more humid parts along streams, and wooded creeks. Along such creeks I found *sharpei* to be ubiquitous, although to-day most of them are cut off from the main body of the forests, encircled by pine plantations or low, dense secondary brush, both quite unsuited to it.

The female spends more time on the ground than does the male. There she is perfectly camouflaged both by her cryptic colour and her quietness (Rand 1936 aptly refers to *sharpei* as "sedate"). Often my first sight of the female was when she flew up only a few yards away, to alight on a low perch. If I tried to get nearer, she flew up into the canopy. The male is also often found on the forest floor, foraging among leaves and debris. Both sexes also take food regularly on mossy tree-trunks, lichen-bedecked thick branches, and even in the canopy. Their perches range from about 1 m up to the lower strata of the canopy. If frightened, they disappear into the canopy, remaining there, if necessary, silent and invisible for hours on end.

The race *erythronotus* prefers places where under a somewhat discontinuous canopy of medium to high trees a luxuriant undergrowth of shrubs, tree-ferns and *Pandanus* thrives. The damp floor is thickly carpeted with fallen leaves, debris, moss, ferns and grass. Many strong lianas intersperse the space under the canopy, giving variety to the typical habitat of the "hooly-hooly", as the local foresters call these birds, in the mist-forests of Mt. d'Ambre. Like the nominate race, *erythronotus* also seems attracted by streams and creeks, although one can find it just as often in the margins as in the depths of the forest. But it never occurs under a continuous and dense canopy lacking in undergrowth, and never takes to places where there are only young trees dispersed among a dense undergrowth. Subject to this, it occurs from the lower edge of the forest, altitude *ca.* 600 m, to almost the summit at 1,450 m, though mostly between 800 and 1,200 m. Assuredly this race prefers the undergrowth more than does nominate *sharpei*. I often saw males, especially at dusk, perched low by a forest path, to swoop down now and then for an insect on the ground, or even to chase prey on the wing with great skill. If alarmed, often with a peculiar and harsh shriek, they dived

with a quick loop into the undergrowth, attaining a safe distance and then ascending into the canopy. Although I could not approach a male nearer than some 15 m, sometimes I could get as near to a female as 4 m. The birds often flew up to a high perch on a main branch from the rear, the head just poking out, a careful watch being kept on my movements.

TERRITORY, REPRODUCTION

According to Rand (1936), the onset of breeding in most Madagascar birds is in some way adjusted to the seasonal rainfall. On Mt. d'Ambre, while there is ample humidity from mist throughout the year, there is also a definite rainy season from December to March, when there are between 100 and 300 mm of rain per month. In the central highlands the picture is similar, but in the east there is good rain in every month, except September/October, when the monthly average can be as low as 50 mm in some places. The races *erythronotus* and *sharpei* start breeding four to six weeks before the onset of the rains, that is, in the second half of October or early in November. In the east, at Périnet, I spent only the middle two weeks of December, mainly because I soon realised that breeding there was already over. A freshly moulted, subadult male in the A.M.N.H. (January 1923, Périnet) also supports the assumption that in *salomonseni* adults and young alike moult in December/January, whereas in the other two races this starts in March. Thus, assuming that six months are needed from time of hatching to completion of moult out of the spotted juvenile dress, it could be that *salomonseni* starts to breed in July, that is, about the driest time of the year. Possibly under the conditions of a more evenly distributed rainfall this would be advantageous.

There is no evidence of any movement in any race of *M. sharpei.* In the nominate and *erythronotus* territories are established in October. The largest one (in *erythronotus*) I estimated to be *ca.* 2·5 ha, but mostly they did not exceed 1 ha. Territorial rivalries seem to be confined to males; females, if present, were never involved in such activities. Indication of territory being marked by song, encroaching rivals were always received with threatening and self-asserting postures. A rudimentary display-flight served as a nuptial display (to the female) or as a kind of self-assertion (to another male). A male of *erythronotus*, incited by a tape play-back, performed in this manner repeatedly, in front of the tape-recorder. He first showed a self-asserting posture, and then flew off to another perch, where he made a gentle bow and repeated the self-asserting posture. The intervening flight had been straight, the wings slowly beaten, the tail fully spread and a bright nuptial song uttered. Similar, reduced display-flights have been reported for *M. cinclorhynchus*, *vide* Lister (1953), and for *M. gularis*, Neifeldt (1966).

In the few cases in which nest-building was observed, only the female was involved. Of the 18 nests found in the Ankaratra Mts., all were built on large trees, mostly in notches on trunks, but very occasionally in forks of thick branches, from 1·5 to 6 m above the ground. They were made entirely of vegetable matter, the thick base and walls mainly of moss, the cup neatly lined with fine rootlets. Typically in the highland race there is a light ring on the rim, caused by a layer of light-coloured rootlets, those towards the lining being darker (Plate 3). Average dimensions are:—height (including beard-like base) 16, total width of cup 8, depth of cup 5 cm. The nest of *erythronotus* is similar except for the absence of the light ring on the rim. The fibrous lining appeared to have been obtained from lianas. However, an important difference in site was noted. Five nests of *erythronotus* found were

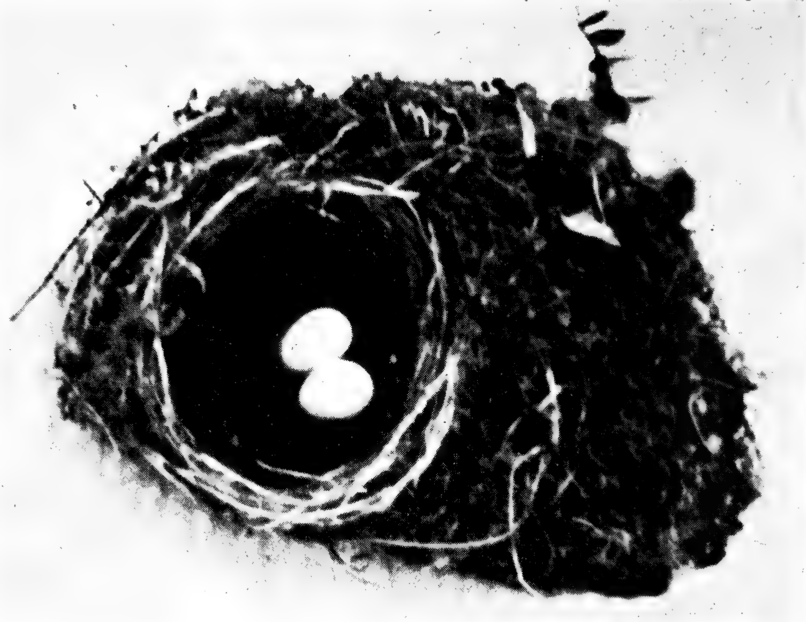

Plate 3. Nest with eggs of *Monticola s. sharpei*; Ankaratra Mts. By author.

all skilfully hidden among *Pandanus* leaves, 3 to 6 m up, always in the deep shadow of the forest canopy. A. Traka, chief forester at Les Rouselles Station, told me that *erythronotus* builds only exceptionally on tree-trunks, mostly on *Pandanus*. However, a sixth nest which I found on Mt. d'Ambre had been built on the trunk of a giant tree-fern, directly over a forest path.

In four clutches of *erythronotus* the clutch-size was only two, only in one was it three; the only clutch of the nominate was also two eggs. In both races the eggs are a pale unspotted turquoise. The two eggs from the Ankaratras measured 24 × 16·5, 23 × 17 mm. Incubation was only observed in *erythronotus*. It was carried out solely by the female; although males, feeding incubating females, were observed at nests too. As soon as I approached a nest, the male always sang a few quiet warning melodies, whereupon the female slipped away from the nest. A female, two days before the hatching of eggs, somehow failed to do so; the male then stooped down to the nest with excited singing and chased her away. The period of incubation is not less than 15 days. Both parents feed the young, which after leaving the nest are under parental care for about one month. The nominate and northern races are probably single-brooded; in the lowland race the whole breeding pattern may be different, as already suggested.

POST-EMBRYONIC DEVELOPMENT

The observations in this and the following section are based mainly on two hand-reared young males of *erythronotus* which I kept from the age of 10 days for two years in captivity (ages as given are always from date of hatching), although supplemented by field observations. The skin of nestlings of *M. sharpei* is yellow, with long, pale grey down; bill pale grey, turning blackish

within two weeks; legs ivory, turning blackish after six weeks. The large head with a bright yellow gape, and long legs, are conspicuous. The sleeping habit of nestlings is also remarkable. They lie mostly on their sides with outstretched necks and legs, the latter "planted" against the lining of the cup of the nest. On the 11th day the eyes of my two young started to open, and by the 15th all my movements were attentively followed. On the 17th day they weighed respectively 32·5, 32 g; at 500 days 41, 43 g. The first clumsy attempts at preening started on the 12th day. They soon improved, and on the 17th preening was extended to the wings and tail. The first head-scratching (indirect) was observed on the 15th.

In begging, the head stretched towards the feeding parent turns alternately left and right from the axis of the body, following the movements of the parent's head. The body is lifted into a sloping position while supported on the intertarsal joints, and the wings are fluttered gently, the one nearest to the parent usually more vigorously than the opposite one ("asymmetrical") fluttering). "Symmetrical" fluttering also occurs, but vanishes soon after leaving the nest. The first vocal component is a quick succession of weak "peeping" tones, changing gradually after the 24th day into a humming "sreee", rather similar to the begging calls in other *Monticola* spp. This call, used in begging or for any other purpose, disappears when the young can feed independently.

The droppings are large, pear-shaped and enveloped in a tough, gelatinous substance. After leaving the nest they become smaller, and the gelatinous envelope disappears. My hand-reared young spent all their time either free in my room, or in a cage when I was on the move. But during a difficult stage of the expedition in January 1970, for reasons of their security, at night they were hung in linen bags over my bed. They accommodated themselves to this with such success that in the mornings they would only defaecate after I opened the bags. But the droppings were again as they had been in the nesting stage.

On the 19th day the young left the nest. They moved around on the ground with quick hops as do adults. (Young in general seem to spend the first few weeks mostly on the ground. Those which I encountered in the Ankaratras in December, when disturbed, quickly flew into the canopy, descending again to the floor when it seemed safe to do so.) On the 24th day the first attempt was made to pick up ants from the ground; by that time they were able to fly some distance with ease, and even make turns in mid-air. The first attempt to catch an insect in flight was made on the 30th day. By the 40th they were dismembering grasshoppers and earthworms, and within a few days had become self-supporting, although begging did not completely disappear until the fourth month.

On leaving the nest, the male can be identified by the vivid red tail, and the brighter lemon-yellow soles and orange gape (in the female the gape and soles are by contrast pale white, this contrast being a widespread feature in the genus as a whole, at all ages). By the 40th day, when the wings and tail had attained their full length, sexual dimorphism becomes further marked by the start of the growth of the axillaries, orange in the male, white tinged yellow in the female. Moult out of the juvenile dress started about the 120th day, on the underparts and nape, reaching its climax in the fifth month and ending early in the sixth. The subadult male has the full colour of the adult. The latter has apparently only one moult a year, and there is no marked

seasonal difference in plumage in *M. sharpei*. However, subadults can be distinguished from adults quite easily. This is because in the juvenile dress the greater wing-coverts have buffy apical markings and the secondaries pale buffy edges. These feathers, together with the primaries, axillaries and rectrices, are not changed in the post-juvenile moult.

I was obliged to cut-back the primaries of my hand-reared young of *M. sharpei* (and also those of young *Copsychus albospecularis pica* obtained at an early stage of the expedition), in order to prevent their escape. Also, owing to crowded cages and constant travelling, some tail-feathers were broken. After my return to my home in South Africa, I left these feathers alone, hoping that I could gradually remove them. But to my surprise, when the moult came, all the damaged primaries and rectrices were replaced in a natural way, while the undamaged ones were retained. A few other hand-reared *M. imerina* and *C. a. inexpectatus* which I collected at a later stage of the expedition, and which escaped cutting or damage, moulted normally; i.e., they retained all their remiges and rectrices. Thus it seems that functional inadequacy caused by damage as described above can induce premature moulting in the young.

DEVELOPMENT OF VOICE AND BEHAVIOUR PATTERNS

Adults of *M. sharpei warn* with a quiet "hjutt-tock-tock". Such notes can also be heard sometimes separately. The "hjutt" was first heard from the young on the 18th day, when they were frightened by a sudden movement on my part. The "tock" was first heard on the 21st day, and accompanied by a bow. A *distress*-call, the shriek already referred to, was also first heard on the 21st day. The *displeasure*-call, a staccato "kerrr-errr", was only first heard on the 117th day; on the same day the *social*-call was also first heard—a gentle "weed", repeated at longer intervals, serving as mutual contact between the sexes, and often heard during the field observations.

First attempts at *subsong* were made on the 17th day, while sleeping in the nest. The throats of the young pulsated, and a few weak inarticulate notes were heard. On the 20th day they sang while awake. Thereafter the daily amount of time spent in this exercise gradually increased, but even by the 40th day there had been no increase in volume. The rasping, guttural *double tones*, so typical of the *rehearsed songs* of all *Monticola* spp. (Greenewalt 1968), were first heard on the 59th day, increasing gradually so that about the 130th day they had become a general feature of the song of these two young. During the seventh month subsong was completely superseded by the rehearsed song, which in adults of the genus is the prevailing form of song in the off-season, though it can also be heard in the breeding season, restricted to the hottest time of day. This rehearsed song in *M. sharpei* is always of a very low volume, although rich in the aforementioned guttural notes and in imitations. Development of *motif* or *primary song* also started at an early stage. On the 64th day one of the young burst into a few, very loud tones (a car had started near us); on the 90th day they repeatedly sang at dusk a few semi-loud motifs, and on the 120th day, again at dusk, they rendered a few short *melodies*. By the 280th day their melodies were in no way inferior to those of adult males; the volume of their primary song remained, however, generally low with a marked daily peak at dusk, until about the 350th day, when the volume of song increased considerably within a few days, heralding the onset of reproductive activity. There is a marked difference in the primary songs of at least *M. s. erythronotus* and *M. s. sharpei*, which, if this were

considered alone, could suffice to regard them as specifically distinct. The repertoire of *erythronotus* consists of a dozen or so highly stereotyped melodies while that of the nominate race is wider and characterized by a measure of variation between individuals. Singing at dusk is typical of both races, but I never heard singing at night.

As regards the *function* of *primary song* in *M. sharpei*, the above features distinguish the *territory song* of the races *erythronotus* and *sharpei*. Like so many other features, the song of *salomonseni* awaits investigation. The *signal song*, being only a shortened form of territory song, serves warning purposes in both races. The limited song-repertoire of females was only heard in this context; thus as soon as I approached a fledged young, it was mainly the female which uttered a few weak signal-motifs, coupled with the staccato note of displeasure and threatening postures.

The *courtship song* can be directed by the male either at a female or another encroaching male. In either case it is co-ordinated with courtship/self-asserting postures, and consists entirely of tonal material peculiar to the species but with an unmistakeable similarity to the courtship songs of other *Monticola* spp. In the young it was first heard on the 196th day.

Both the nominate race and *erythronotus* can imitate. But, while *erythronotus* does only in the rehearsed song, *sharpei* imitates in both the rehearsed and territory songs. They imitate only the calls, never the songs, of other birds. The first imitation was heard on the 131st day. It was of the call of *Malaconotus zeylonus*, a common species around my home in the Cape. The repertoire was further enlarged on the 196th day by imitation of *Parus afer;* after the juvenile moult, calls of *Nectarinia famosa*, *Prinia maculosa* and *Spreo bicolor* were added. On the 220th day imitation was heard of *Hartlaubius auratus* and *Tchitra mutata*, and in the following weeks of *Coracopsis vasa* and *Nesillas typica*, which had last been heard some five months previously while still in Madagascar.

In addition to begging as described above, other *fixed action patterns* became apparent, in sequence as follows:—The *twitching* of the *folded wings* is only a gentle movement of the remiges including the primaries. It was first observed in sleeping nestlings only 16 days old. On leaving the nest, a slow *tilting* of the *folded tail* (up to *ca.* 30 degrees) was noted. While wing-twitching can be repeated several times in quick succession, tail-tilting is always a single movement. On the 91st day *twitching* of the *folded tail* was noted—a very quick spreading-and-folding of the rectrices. It is not very conspicuous because only the two outermost pairs of feathers are used in this scissor-like movement. It can be repeated, but only after a long interval. The *tail* can also be *completely spread* (fanned) and remain in this position for a while. Finally, the *fanned tail* can also be *twitched* by a very swift folding-and-spreading of the two outermost pairs of feathers only.

Two variations of head-movement were also noted in *M. sharpei*. On one, the head is pointed motionless towards the opponent, and the neck somewhat intracted. In the other, the head is tossed rhythmically to the left-straight ahead-to the right, thence back to straight ahead. In both variations the head feathers are kept firmly depressed.

The sole *intention movement* is performed immediately on leaving the nest. The clumsily hopping young, attaining some elevated point, assumes an upright stance and makes a single, lazy bow synchronized with wing-twitching and tail-tilting. In great excitement only, this intention movement can be repeated twice or thrice in quick succession. The interesting

point is that this movement soon fades away with age; adults seldom so perform.

Interspecific aggressiveness was first noted on the 38th day, i.e. playful chasing of a fledged *Copsychus albospecularis*. On the 43rd day the first action of intraspecific aggressiveness followed. On the 59th with all feathers depressed and the body erect, the young showed the first *greeting ceremony;* the head pointed slightly upwards and the bill slightly open, a rapid subsong was uttered. From this juvenile posture the courtship display was gradually evolved.

On the 96th day the first *threatening posture* was noted; the feathers on the mantle, back and lower breast somewhat bristled, the head pointed stiffly towards the opponent, the wings and tail twitched synchronously at irregular intervals and a few warning calls uttered (this posture was observed in both sexes). Soon thereafter followed a stage of development when the young often showed ambivalent threatening and greeting postures while singing primitive courtship songs. From these elements first on the 280th day the *self-asserting posture* ("imponieren") and then on the 300th day the *courtship display* evolved. In the self-asserting posture all the feathers are depressed, and the tail widely spread and either titled up (if the male stays on the floor), or pressed down (if on a branch). In either position the tail is also twitched repeatedly. The head is tossed rhythmically, and a few sharp whistles uttered (cf. *M. rupestris* and *M. angolensis*, in Farkas 1962, 1968). If self-asserting is performed on the floor, the male *runs* around with clumsy steps; if on a branch or other perch, he makes several turns, showing himself off alternately from the front and the back to his opponents (males), which keep their distance. The courtship display is almost the same except that it is accompanied by a courtship song typically mingled with "tock-tock's" and mimicry. If the male performs on the floor, he again *runs* around the female.

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SUMMARY

The status of the polytypic *Monticola sharpei* is reviewed, and a diagnosis given of its lowland race. In support, details of morphology, distribution and habitat preference are compared for the three subspecies so far known. The possibility of the existence of a fourth one is also mentioned. While in plumage, breeding season, habitat preference, primary song, nest and choice of site thereof, and timing of moult, there are certain divergences between the subspecies, as regards eggs and clutch-size, incubation, care of offspring, fixed action patterns, and calls and rehearsed songs, there seem to be no marked differences.

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The natal pterylosis of the Swallow-tanager

by Charles T. Collins

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The natal pterylosis of passerine birds has received some attention in North America (Wetherbee 1957, 1958) and more recently in South Africa (Markus 1971). However, such information is nearly lacking for the vast assemblage of Neotropical birds, other than unquantified field observations included in various life history studies and brief quantified observations made on two species of tanagers (Collins 1963). Data are particularly lacking for species, as the Swallow-tanager *Tersina viridis*, which make up some of the smaller and distinctive taxa inhabiting this region. Until recently this distinctive fruit eating Neotropical species has been placed in the monotypic family Tersinidae. More recently (Storer 1970) it, and the tanagers of the closely related family Thraupidae, have been relegated to subfamilial status within the more inclusive family Emberizidae. However, Sibley (1970, 1973) considered *Tersina* to be only a distinctive genus in the tribe Thraupini and probably most closely related to *Thraupis* and *Tangara*.

The information presented here on the natal pterylosis of *Tersina viridis* was obtained principally from eight preserved specimens of young birds. All were collected by me in the vicinity of the Estacion Biologica de Rancho Grande, Est. Aragua, Venezuela during the spring of 1972, and are referable

to *T. v. occidentalis*. Of these eight, five were very small nestlings (Stage A, see Wetherbee 1957: 356) and three were late stage embryos removed from eggs which expectedly would have hatched within a day or two. The additional data from three nestlings which were examined in the field before being returned to the nest are incomplete in that the small neossoptiles of the ventral tract, secondaries and rectrices were overlooked and thus not recorded. The data from all other tracts have been included since they are in close agreement with the more detailed counts made on the preserved specimens.

The total number of neossoptiles varied from a low of 77 to a high of 107 per bird. However, four of the eight specimens had from 101 to 103 neossoptiles and thus a typical number of 102 can be assigned to the species based on this and the number most frequently observed for each individual tract. As discussed later, two tracts were exceptionally variable and for one of these the numerical average was used since there was no single typical number for the tract. The total number of neossoptiles is given in Table 1, and the distribution of these neossoptiles in *Tersina* is given in Table 2.

Table 1. Total number of neossoptiles

Species	Number of specimens	Total number of neossoptiles
Tanagra (Euphonia) violacea	1	32*
Thraupis palmarum	2	184–224*
Piranga olivacea	2	227**
Tersina viridis	8	102 (77–107)

* from Collins (1963)
** from Wetherbee (1958)

Table 2. Counts of neossoptiles of *Tersina viridis*

Tract	Number of neossoptiles		
	Minimum	Typical	Maximum
Coronal	3	4	6
Occipital	4	4	5
Humeral	6	8	10
Spinal (upper)	4	5	7
Spinal (lower)**	2	8*	12
Femoral	4	7	8
Ventral	0	6(5*)	9
Secondary	0	1	1
Secondary Coverts	4	6	7
Caudal	6	6	6

* numerical average to nearest whole number
** unpaired tract along midline; all others paired

The only previous information on the natal pterylosis of *Tersina* is the statement by Schaefer (1953: 439) that they have "sparse natal down". The down of all of the specimens examined in this study appeared to be uniformly whitish or greyish-white, whereas Schaefer reported it to be "of the same yellowish-pink color as the rest of the body, giving the skin a peculiar light golden hue". This discrepancy is not easily resolved as both studies were conducted in the immediate vicinity of the Estacion Biologica de Rancho Grande.

The number of neossoptiles for each tract usually varied within rather narrow limits and was constant or nearly so in some. Exceptions to this were the lower midline portion of the spinal tract and the ventral tract. In the former case the great variation (2 to 12 neossoptiles) made the choice of a typical number impossible and the average number was utilized. In the case of the ventral tract four specimens had four, five or seven neossoptiles but others had less (in one case none) and one had nine. A compromise number

would seem to be six: a value not actually observed in any specimen. The average number of neossoptiles in the ventral tract of all specimens was five. If this average value is used as the typical number for the tract the typical total count for the species would be reduced to 100, a value slightly less than the most frequently observed total. Thus the choice of six as the typical number for this tract seems more appropriate. The neossoptiles from most tracts were of medium length as compared to those of other species. However, the neossoptiles of the ventral tract, secondaries and rectrices were very short (1–2 mm) and, as mentioned above, overlooked in the course of field observations of one brood of nestlings. The total number of neossoptiles is noticeably less than for two of the three species of tanagers for which data are available (Table 1). Both of the species of tanagers having higher total counts of neossoptiles build normal open nests while *Tersina* nests in burrows (Schaefer 1953) and *Tanagra* (*Euphonia*) *violacea* builds a compact domed nest. Further information is needed on a wider array of tanagers and their allies (Collins unpublished) before much weight can be given to this seeming correlation between "cavity" nesting and a reduction in number and distribution of neossoptiles.

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A small collection of birds from Muara Island, north Borneo

by Kenneth W. Prescott

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Reading Max C. Thompson's account (1966) of birds which he had collected on north Borneo caused me to refer to my notes concerning a small group of specimens which I had collected from Muara Island, north Borneo in June and July 1945. At first reading, it appeared that he had collected most of the

species on the eastern coast of north Borneo but not all that I had found off the west coast. Recent comparison of my Muara birds with specimens at the American Museum of Natural History and with those at the United States National Museum disclosed a new subspecies of iora (Prescott 1970b), a kingfisher race new to Borneo (Prescott 1970a) and an important record of the Stork-billed Kingfisher in Borneo (Prescott 1972). It seems advisable, even after such a long post-collecting period, to cause a brief account of this small collection, the only known (to me) from Muara, to be added to the literature.

Muara is a small island in Brunei Bay located off the north-west coast of Borneo just north of the Sarawak boundary, at approximately 5°N longitude and 115°E latitude. Collecting was carried out with the co-operation of the United States Navy as the writer was then serving as Executive Officer of the *U.S.S. Jamestown, AGP-3*. The specimens, made up as skins, are in the collection of the Museum of Zoology, University of Michigan (UMMZ), Ann Arbor, Michigan. The following species account is based on field notes of three brief collecting trips made during morning hours.

Treron curvirostra nasica, Thick-billed Green Pigeon: Specimen, 1: juv., sex (?), 17th July 1945, UMMZ 114,000. Several were observed on the ground and in thick bushy undergrowth, two or three feet high, alongside a small fresh-water stream about 50 feet from the ocean beach. They were shy and when frightened flew a short distance upstream to the protection of similar bushy growth. Thompson (1966: 395) collected *T. c. curvirostra* and Smythies (1968: 232) gives *T. c. curvirostra* as resident throughout Borneo although questioning if this subspecies is recognizable as the form on Banggi and Balambangan Islands.

Halycon chloris collaris, White-collared Kingfisher: Specimens, 2: male and female, 17th July 1945, UMMZ 113,926 and 113,927. The only two seen were collected near the ocean shore; the female from a tall deciduous tree and the male from low second growth. These are the first recorded specimens from Borneo (Prescott 1970). Thompson (1966: 401) collected *H. c. chloroptera* and this is the race reported by Smythies (1968: 308–310) as resident throughout Borneo in coastal areas and estuaries, and a familiar garden bird in Brunei. It is of interest that Smythies (*loc. cit*) found evidence of seasonal movement for *H. c. chloroptera*, i.e. being present during the breeding season (January–August) in the west coast Kimanis Bay area just above the range of the Stork-billed Kingfisher but absent thereafter. Although I did not see *H. c. chloroptera*, my specimens were taken from the same general locality in which I took a Stork-billed Kingfisher.

Pelargopsis capensis innominata, Stork-billed Kingfisher: Specimen, 1: sex (?), 11th June 1945, UMMZ 114,018. This specimen has already been fully commented on by Prescott (1972: 160).

Lalage nigra schisticeps, Pied Triller: Specimens, 2: male and female (?), 17th and 19th July, UMMZ 113,994 and 113,995. Both specimens were taken from low lying bushy, second growth. The species was seen but not taken by Thompson (1966: 416). Smythies (1968: 380) describes *L. n. nigra* as the race in Borneo and the north Bornean Islands and Maratuas. Chasen & Kloss (1930: 60) collected eight specimens of *L. n. nigra* on an island lying off the north-eastern coast of Borneo.

Aegithina tiphia trudiae, Common Iora: Specimens 4: two males and two females, 17th and 19th July 1945, UMMZ 113,996 through 133,999. This group represents a new race (Prescott 1970b: 39–40). Thompson (1966: 420) collected individuals of *A. v. viridissima* in south Borneo and Sarawak and

A. t. aequanimis in north Borneo and Palawan. However, Smythies (1968: 387–388) gives *A. t. viridis* for south Borneo and Sarawak, *A. t. aequanimis* for north Borneo with the boundary between it and *viridis* coinciding roughly with the "Sarawak-British North Borneo" boundary.

Anthreptes malacensis bornensis, Brown-throated Sunbird: Specimens, 6: four females and two males, 11th June, 17th and 19th July 1945, UMMZ 114,002 to 114,006 also 114,019. All were collected from flowering bushes in low second growth at the edge of a cleared area. Individuals returned to the same area several minutes after a shot was fired and were in company with *Aethopyga s. siparaja*. Thompson (1966: 427) also collected this species. Smythies (1968: 492–493) gives *A. m. bornensis* for north Borneo including the north Bornean islands and *A. m. malacensis* for south Borneo and the Karimatas.

Aethopyga s. siparaja, Yellow-backed Sunbird: Specimen, 1: male, 17th July 1945, UMMZ 114,007. In company with the last species, several were seen in the flowering bushes at the edge of a clearing. They were extremely shy and difficult to approach. Smythies (1968: 498–499) describes the species as a common resident in the lowlands of the main island of Borneo, Banggi Island, the Maratuas and Karimatas. However, Thompson (1966: 428) described three *siparaja* individuals taken at Tawau which he noted as having darker wings than others of the race.

Dicaeum trigonostigma, Orange-bellied Flowerpecker: Specimen, 1: juv., female (?), 17th July 1945, UMMZ 114,001. Collected from the flowering bushes at the wood's edge with the two sunbirds (above). Identification of this juvenile to subspecies is uncertain. Thompson (1966: 431) collected one specimen of *V. t. dayakanum*. Smythies (1968: 487) gives *D. t. trigonostigma* from the Karimatas and *D. t. dayakanum* from the main island of Borneo.

Acknowledgements: I am grateful to Max C. Thompson and Robert W. Storer who kindly read an early draft of this note and made critical suggestions; moreover, the latter kindly loaned the UMMZ Muara specimens. I shall always be indebted to the late Josselyn Van Tyne who encouraged me to make the South Pacific collections.

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Coracina papuensis in Indonesia

by C. M. N. White

Received 20th August, 1973

Coracina papuensis is a cuckoo shrike which ranges from Australia and New Guinea to the Solomon Islands and the eastern Indonesian Archipelago. In the last area Peters (1960: 179–181) lists two forms: *melanolora* Gray in the northern Moluccas, and *timorlaoensis* Meyer in the Tenimber Islands. *Melanolora* hardly merits recognition as it is like the nominate form of west and north New Guinea but averages larger. Mees (1972: 81–82) has most recently pointed out that it is an extremely poor subspecies. In the case of

timorlaoensis the distribution given is incomplete and the validity of the subspecies questionable.

Meyer described *timorlaoensis* in 1884 from two specimens from the Tenimber Islands, both females. No other collector has obtained it there, including Kühn who made a considerable collection there at the end of 1900 and in early 1901. Finsch (1901: 250) listed a female from Kisar collected by Schädler on 4th December 1897, and still in the Leiden Museum. Finsch identified this as the north Australian form *hypoleuca*, of which he considered *timorlaoensis* a synonym. He also reported a female from Great Kei collected on 23rd May 1865 by Hoedt, which he likewise identified as *hypoleuca*. Kühn made large collections in the South-West Islands, including Kisar, but the only occasion when the species was found was in June 1906, when two females were collected on Sermatta. Hartert (1911: 166) identified these as *timorlaoensis* with a query and a remark that it was doubtful if the form could be distinguished from *hypoleuca*. Kühn also made large collections in the Kei Islands where he did not obtain the species. Van Bemmel (1948) overlooked the Great Kei record, and Peters (1960) has overlooked it and also the records from Kisar and Sermatta.

Thus there is little to support the existence of a distinct subspecies, *timorlaoensis*, in the Tenimber Islands. Rather there are a few scattered records, all of females, from Tenimber, Great Kei, Sermatta and Kisar which seem identical with north Australian *hypoleuca*. Indeed they are perhaps only occasional nomadic migrants, as the dates in May and June, the Australian winter, may indicate. The December record in that case is peculiar. In the Northern Territory in Australia *hypoleuca* is known to breed from November to January.

I am grateful to Dr. G. F. Mees for information about the specimens in the Leiden Museum, and for discussing the question dealt with in this note.

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Pachycoccyx audeberti: some addenda

by C. W. Benson & M. P. Stuart Irwin

Received 18th July, 1973

We (1972, *Arnoldia, Rhodesia* 5(33): 24 pp.) detailed what is known about the distribution, biology and systematics of this cuckoo. A few points worth mention have come to light subsequently.

On p. 3 we drew attention to its sparseness, both in Africa and in Madagascar. Further emphasis to this is lent by the fact that in the original description of nominate *audeberti* (Schlegel 1879, *Notes Leyden Mus.* 1: 99) it was reported that the example collected by Audebert was the only one met with in the course of two years in north-eastern Madagascar.

On p. 8 we were un able to accept a record of parasitisation of the Violet-backed Starling *Cinnyricinclus leucogaster* (see originally Neuby-Varty 1946,

Ostrich 17: 345). Neuby-Varty gave the measurements of the egg claimed to be of this cuckoo as 25 × 18 mm. The Rev. Dr. William Serle (pers. comm.) has pointed out that the colour, markings and *size* are correct for *C. leucogaster*, and that it is most unlikely to be an egg of *Pachycoccyx*. Furthermore, as he writes, the broken egg of this cuckoo reported by Fischer & Reichenow (1879, *Journ. Ornith.* 27: 341) (see our p. 6) was only slightly longer but no wider than an egg of *Euplectes flammiceps* (=*hordeaceus*). McLachlan & Liversidge (1970, *Roberts birds of South Africa*, 3rd ed., Cape Town: John Voelcker Bird Book Fund: 564), for instance, give an average measurement for the egg of *E. hordeaceus* as 18·5 × 13·8 mm only. Indeed so far the only proven host is the Red-billed Helmet Shrike *Prionops retzii*.

We regret that on p. 14 no acknowledgement was made to Dr. Kenneth C. Parkes, Curator of Birds at the Carnegie Museum, Pittsburgh. He most kindly lent Benson the specimen in that museum (p. 19). See p. 20, Dr. J. Steinbacher reports that there is no specimen in the Natur-Museum und Forschungsinstitut Senckenberg, Frankfurt.

We did not use a male in the Transvaal Museum from "Chambere, G. E. Afr., 24.9.03, J. V. O. Marais", since we could not trace this locality (p. 19). However, Mrs. M. K. Rowan and Dr. A. C. Kemp have drawn our attention to a note by Roberts (1935, *Ostrich* 6: 48), in which he discusses the specimen in that museum from the Olifants River, 16th July 1934, and another one therein from "near Bagamoyo, Tanganyika Territory". Evidently Roberts had knowledge of the history of this specimen, not recorded on the label, and it may reasonably be presumed to be one and the same as the Chambere specimen. We have still been unable to trace Chambere on any map, but it can be accepted as being near Bagamoyo, in coastal Tanzania, and whence we recorded (p. 18) a specimen in the Museum of Comparative Zoology, Harvard. The Chambere specimen was examined by Irwin. Although Roberts found the difference between it and the Olifants River specimen "quite pronounced", and attributed the former to *P. a. validus* (Reichenow), the latter to *P. a. canescens* Vincent, we attribute both to *validus*, of which *canescens* is a synonym, and founded on a specimen in very fresh dress (see our p. 12). The Chambere specimen has wing 217, tail 182, culmen from base 29 mm.

Dr. Kemp reports that the Transvaal Museum has recently received a female specimen collected by O. P. M. Prozesky at Croc Ranch, Phalaborwa area, eastern Transvaal, at 23°55′S., 30°55′E., 1,500 ft. a.s.l., 10th September 1972; wing 242, tail 202, culmen from base 27·3 mm. Also, Kemp himself saw an individual on the farm Charleston, eastern Transvaal, at 24°53′S., 31°35′E., 1,000 ft. a.s.l., 12th July 1973. It was moving steadily from tree to tree in dry leafless mixed woodland, but was not seen to feed.

Some remarks on the Lammergeyer *Gypaetus barbatus* in East Africa

by E. Schüz

Received 20th July, 1973

In his interesting bird observations on the Shira Plateau and Kibo, Kilimanjaro, King (1973, *Bull. Brit. Orn. Cl.* 93: 68) gives only one record of the Lammergeyer, an individual of which he saw on 6th November 1968. Guest & Leedal (1954, *Tang. Notes & Recs.* 36: 47), who King quotes, and who

spent two months on the mountain, never saw it. However, there are other records from Kilimanjaro, to which attention should be drawn. Fuggles-Couchman & Elliott (1946, *Ibis* 88: 330) saw a pair west of the Shira ridge on 24th October. Schüz (1958, Altes und Neues über das Vorkommen des Bartgeiers (*Gypaetus barbatus*) in Ostafrika. *Journ. Ornith.* 99: 394–398) gives at least five records since 1932 from various localities on Kilimanjaro, apart from several by the missionary, the late Dr. Reusch. G. H. H. Brown (1963, *Journ. E. Afr. Nat. Hist. Soc.* 24: 72) gives another record—an immature bird which accompanied his safari on the march between the Bismarck and Peters Huts. So far the only material ("in the hand") evidence is from a feather, a secondary, found by me (Schüz 1958, *op. cit.*: 396) on 5th September 1957 at Peters Hut (3,800 m), now in the bird exhibition rooms at Schloss Rosenstein (Staatl. Mus. für Naturkunde in Stuttgart). The Game Department report of an immature Lammergeyer caught and photographed by Wilhelm von Fürstenberg (foot-note in Moreau 1944, *Tang. Notes & Recs.* 18: 48) is obscure, since Baron Fürstenberg wrote to me in 1958 that he only had one field observation and had never possessed a specimen of this species or photographed it.

As mentioned (Schüz 1958, *op. cit.*: 397), records of the Lammergeyer in East Africa are of interest as showing a connection between the centres of distribution in Ethiopia in the north and the Drakensberg Mts., in Natal, in the south. The most southerly outlying northern (East African) record is from Mbeya, southern Tanzania (Moreau pers. comm. to Schüz 1958, *op. cit.*: 397), and the most northerly outlying southern (South African) one from Maruma (20°25′S., 33° E.) on the Mozambique/Rhodesia border. The Maruma record is based on a specimen (Swynnerton 1908, *Ibis* [9]2: 425). Both these records were repeated by Benson & Irwin (1963, *Ardea* 51: 222). With regard to the Maruma one, Irwin (pers. comm., 4th August 1973) informed Benson that he knows of no further record from either Mozambique or Rhodesia, and suggested that it probably represented a migrant from further south. Benson has also written to me as follows:—"Despite the fact that ornithologically it has been well explored and documented—Belcher (1925, *Ibis* [12]1: 797–814) and Vincent (1934, *Ibis* [13]4: 126–160) are only random examples—I know of no record of the Lammergeyer from Mt. Mlanje, southern Malawi. Mlanje rises to *ca.* 3,000 m, the uppermost 1,000 m, above the montane grasslands, being bare and boulder-strewn. There is an excellent account of this mountain by Chapman & White (1970, *The evergreen forests of Malawi*. Oxford, Commonwealth Forestry Institute: 162–171)".

To bring my synopsis of East African records (Schüz 1958, *op. cit.*) up to date, the following references are relevant:—Hale (1958, *Journ. E. Afr. Nat. Hist. Soc.* 23: 16); L. H. & G. H. H. Brown (1963, *Journ. E. Afr. Nat. Hist. Soc.* 24: 72); Paul Geraghty (1969, *Animals* 12: 312); Dewhurst (1971, *E. Afr. Nat. Hist. Soc. Bull.*: 133); and Gerhart (1971, *E. Afr. Nat. Hist. Soc. Bull.*: 173). Brown & Brown (1963, *op. cit.*) claim that their records from Mt. Elgon and Muruanisagar, 40 miles west of Lodwar, thus both slightly west of 35°E., appear to be a considerable westward extension of the known range in East Africa. However, records from the Ngorongoro Crater, in northernT anzania (Schüz 1958, *op. cit.*: 397; Huxley & Nicholson 1963, *Ibis* 105: 106) are from almost as far west, at *ca.* 35°30′E.

Brief reference may be made to what little is known about the breeding status of the Lammergeyer in East Africa, partly based on information from L. H. Brown (pers. comm. to Benson, 6th September 1973). North (1948, *Ibis* 90: 138–141) has given some information from Kenya, but there still

seems to be no known breeding site in Tanzania. North records an egg taken at a site within 50 miles of Nanyuki in May, and according to Brown the site was in the Loldaiga Hills, near Nanyuki. North also mentions a site within 50 miles of Naivasha, but could not give a date for breeding. According to Brown a pair started to breed in the Njoroma Gorge (Hell's Gate), near Naivasha, in 1964, and has done so every year since, except 1971. This site has been visited by up to 2,000 tourists annually. Information therefrom is the source of what is written in Brown & Amadon (1968, *Eagles, hawks and falcons of the world.* London, Country Life Books: 313), that egg-laying takes place in Kenya in January; likewise that from the Nanyuki site in May. North also briefly mentions a site on Mt. Kenya, and Coe (1967, *Monogr. Biol.* 17. Den Haag: 108) implies that the Lammergeyer breeds on that mountain. There must surely be breeding sites in Tanzania and other ones in Kenya. Further information is required, but the most urgent necessity is protection.

I am much indebted to C. W. Benson and Dr. L. H. Brown for their assistance in the finalisation of this paper.

Organochlorine insecticide residues and food remains in a Bald Ibis *Geronticus eremita* chick from Birecik, Turkey

by J. L. F. Parslow

Received 24th August, 1973

The Bald Ibis *Geronticus eremita* is a rare, declining species whose only known breeding colonies are in Morocco and on a cliff in the town of Birecik, which stands beside the upper Euphrates in south-east Turkey (see Smith 1970). The only other member of the genus is the almost equally rare *G. calvus* (also known as the Bald Ibis and regarded by some authorities as conspecific with *eremita*) which is restricted to South Africa where there are about 1,000 pairs in 70 known breeding colonies (Siegfried 1971). The numbers of *eremita* are still decreasing. The total known population of wild birds in 1972 was only about 150 pairs, of which about 60 pairs bred; 26 of these nested at Birecik, in which area there were as many as 530 pairs in 1953, but only 130 pairs in 1962 and 45–48 pairs in 1967 (Kumerloeve 1962, 1965, 1967; Porter 1973; U. Hirsch *in litt.*). The species is listed in the I.U.C.N. *Red Data Book* of endangered animals, and studies of its breeding ecology in Turkey have recently been initiated under the auspices of the World Wildlife Fund as part of a programme of conservation measures. These studies are being carried out by U. Hirsch who (*in litt.*) has traced the decline to two main factors: first, the uncontrolled use of DDT ,dieldrin and other insecticides in the Birecik area by the Turkish Ministry of Health during 1958–60, which resulted in more than 100 Bald Ibises being found dead in 1959–60 in the colonies and in the fields in which the birds feed, and second, the increased disturbance of the colonies due to house building in the immediate vicinity. Kumerloeve speculated that increased cultivation along the banks of the Euphrates (and the consequent loss of feeding areas), as well as poisoning from synthetic insecticides, had caused the decline. In order to determine whether the synthetic organochlorine insecticides might still be having an effect on the birds, a chick and an egg collected in 1972 were sent to Monks Wood Experimental Station for analysis. This paper discusses the results and, because so little detailed information exists on the species' diet, also reports on the food remains found in the chick's stomach.

CHEMICAL ANALYSIS OF AN EGG AND CHICK

The egg was collected from the colony by U. Hirsch, C. D. W. Savage and others on 4th May 1972. The contents showed no signs of embryonic development. The chick was seen to fall from a nest (during a quarrel with one of its siblings) on 15th May 1972 and was picked up dead beneath the colony. It was about 10–15 days old. The egg contents and liver of the chick were analysed at Monks Wood for organochlorine insecticide residues using gas-liquid chromatography. A sample of the food remains from the stomach of the chick was also analysed for organochlorine residues but with negative results. In addition, the egg contents were analysed by atomic absorption spectrophotometry for certain potentially toxic metals. Determinations for cadmium (Cd) and lead (Pb) were made but were negative (levels of detection, *ca.* 0·2 ppm). Positive results are given in Table 1.

TABLE 1

Organochlorine and toxic metal concentrations (in parts per million wet weight) in a Bald Ibis chick and egg. (ND = none detected, <0.05 ppm; * = not analysed.)

	pp′-DDE	dieldrin	mercury (Hg)	copper (Cu)	zinc (Zn)
Egg	1·8	0·3	0·12	1·34	15·8
Chick	0·4	ND	*	*	*

In avian tissue, DDT almost invariably metabolises to DDE, and aldrin to dieldrin. The finding of DDE in the egg and chick and dieldrin in the egg indicates that the parent birds must have been exposed, presumably through their prey, to DDT and aldrin/dieldrin at some stage during their life, if not in Turkey then on migration or in their winter quarters in north-east Africa. The residues found, however, are not especially high and are unlikely at these levels to be having serious sublethal effects—that is unless the Bald Ibis happens to be very much more sensitive to these materials than any other bird species yet tested. Certainly the concentrations recorded are equivalent to the normal 'background' contamination levels now present in the eggs and tissues of many bird species in Britain.

The concentration of toxic metals detected in the egg are probably also normal. Hg is present in small quantities in virtually all British bird tissues and eggs, and in seabird eggs for example are normally 4 to 50 times higher than the levels in the Bald Ibis egg without causing any apparent adverse effects. Symptoms of Hg poisoning in gallinaceous species do not occur until liver residues reach at least 15 ppm (Borg *et al.* 1969), while reduced egg hatchability in the same group does not occur until egg residues reach about 0·5 ppm (Fimreite *et al.* 1970). Cu and Zn, in trace quantities, are of course essential for all forms of life and the concentrations reported here are in no no way atypical for an avian egg.

FOOD REMAINS IN THE CHICK

Both *Geronticus* species appear to have similarly varied diets, though no detailed studies have been published. Various insects and other terrestrial invertebrates, molluscs, lizards, frogs, fish and dead small birds and mammals are all mentioned in the literature as prey items (e.g. Siegfried 1966, Smith 1970, Porter 1973), while Pala (1971) found that the stomach contents of a Birecik adult caught on 5th June 1969 comprised almost entirely locusts

and bush-crickets (70% *Calliptamus italicus*, 25% *Dociostaurus maroccanus*, 5% Tettigoniidae) plus a large, hairy spider. On dissection at Monks Wood, the stomach of the chick from Birecik was found to contain the fragments of a wide range of mainly ground-living insects. A representative sample was used for the organochlorine analysis (see above) and the remainder (about two-thirds of the total) were sent to the British Museum (Natural History) for identification. At least 15 different insect species were represented (48 individuals) belonging to seven families; five crustacean claws were also present. A full list of species with minimum numbers of individuals of each is given in Table 2.

TABLE 2

Food remains in the gizzard of a Bald Ibis chick from Birecik

Species		Min. no. of individuals
Gryllopalpidae (mole-crickets)		
Gryllotalpa gryllotalpa (L.)	adults:	4
	nymphs:	11
Formicinae (ants)		
Messor sp.		1
Camponotus sp.		11
Tenebrionidae (nocturnal ground beetles)		
Amnodeis ?confluens Mill.		1
Adesmia procera Mill.		1
Pimelia bajula Klug		5
indet. sp. (small)		1
Carabidae (ground beetles)		
Zabrus rotundicollis (Mén.)		2
Scarites sp.		1
Buprestidae (jewel beetles)		
Julodis onopordi (F.)		2
Scaraboidae (chafer and dung beetles)		
Copris ?hispanus L.		3
?*Scarabaeus* sp.		2
indet. (2 spp.)		2
Curculionidae (weevils)		
indet. sp.		1
Crustacea		
indet.	no. of claws:	5

ACKNOWLEDGMENTS

Colleagues at Monks Wood Experimental Station—M. C. French, A. A. Bell and Dr. R. C. Welch—were responsible for the chemical analyses and other technical assistance, and Peter Hammond at the British Museum (Natural History) identified the prey remains from the chick; U. Hirsch and C. D. W. Savage made valuable comments on an earlier draft of this paper. I am grateful to them all.

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Nesting of Verreaux's Eagle *Aquila verreauxi* in Zambia

by J. F. R. Colebrook-Robjent & T. O. Osborne

Received 29th August, 1973

The breeding of *Aquila verreauxi* is well known from Tanzania, Malawi and Rhodesia, but has not so far been recorded from Zambia. In Benson *et al.* (1971) there are sight records of this eagle from rocky hills in the Eastern and Northern Provinces. It has recently been seen by R. J. Dowsett and Colebrook-Robjent in the gorges below the Victoria Falls in the Southern Province: see the cyclostyled *Bull. Zambian Orn. Soc.*, June 1972, 4(1): 25.

Nyanje Hill is particularly mentioned by Benson *et al.*, and it is from this area that we now record the first known nest of this eagle in Zambia. On 11th June 1972 Colebrook-Robjent and R. Stjernstedt discovered a nest in a wind-hole cave about halfway up a sheer 70 m granite rock face on Mbewa Hill, west of Nyanje Village. One of the pair was flushed from the nest, which was judged to contain eggs. One of us (J. C.-R.) attempted, but did not reach the nest. On 19th May 1973 J. C.-R. and T. O. O. visited the same nest-site, and from the opposite side of a ravine we saw the eagle on the nest. Later T. O. O. reached the nest, which contained two eggs. The large stick nest almost covered the "cave" floor, measuring approximately 2·5 wide by 1·5 m high. The cup was lined with green but dry *Brachystegia* leaves and measured 45 cm across. The two bluish white eggs were fairly evenly, but lightly spotted, and measured $77 \cdot 1 \times 60 \cdot 2$, $75 \cdot 4 \times 58 \cdot 4$ mm. They weighed respectively 150 and 135 g. One was collected and proved to be almost fresh. The egg-white was sent to Prof. Charles Sibley of Yale University for analysis.

Brown & Amadon (1968) give the average measurements of 30 eggs as $76 \cdot 9 \times 58 \cdot 6$ mm. The peak egg-laying month in Rhodesia is May, and the only such record from Malawi is also for May (see Benson *et al.* 1964, as augmented for Rhodesia by Vernon 1965).

A glance at any detailed map of the area will suggest that there are other pairs of Verreaux's Eagles inhabiting the scattered rocky hills along the southern boundary of the Eastern Province of Zambia. Similar habitat extends far into neighbouring Mocambique.

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Observations on *Bradypterus carpalis* and *Bradypterus graueri*

by Ruth Trimble Chapin

Received 1st September, 1973

(1) *Bradypterus carpalis* Chapin

The original series of *Bradypterus carpalis* (four males; one female) was secured in the Uele District of the then Belgian Congo from 1911 to 1913 and was described in 1916. The species was next recorded by van Someren (1919). Apparently without knowledge of the description of *carpalis*, van Someren named his birds *yokanae*. Delacour (1943: 34) and Chapin (1953: 435) considered *yokanae* not even subspecifically distinct from *carpalis*.

For many years these were the only known specimens of this species, and it came to be regarded as one of the rare birds of Africa. However, Schouteden (1966) recorded a specimen taken in the valley of the Akanyaru River, east of Butare (formerly Astrida) Rwanda; and more recently Britton & Harper (1969) reported collecting seven specimens of *carpalis* near Lake Kanyaboli, western Kenya.

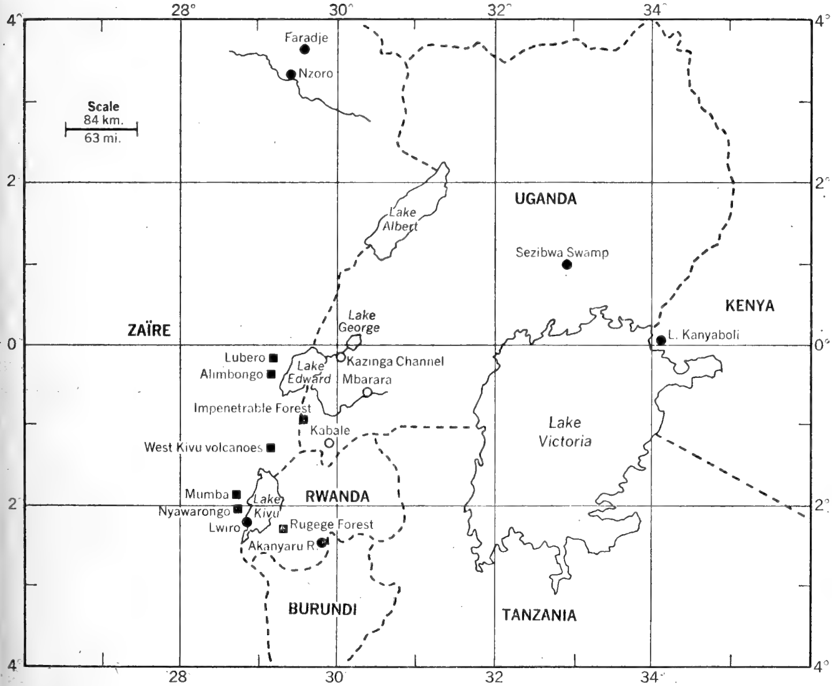

Figure 1: Localities of specimens of *Bradypterus graueri* (■) and *B. carpalis* (●). Open circle represents field observations of the latter.

No additional specimens from the Congo (now called République du Zaire) were obtained until the species was rediscovered in a marsh near Lwiro, Kivu District. The sedge warblers were always of great interest to

my husband, and at every likely marsh we watched and listened for *Bradypterus* of any kind. At Tshibati, 6,400 ft., Kivu District, where we lived for five years, we found only *B. baboecala centralis*. But at Lwiro, more than a thousand feet lower in altitude, we heard on numerous occasions a distinctive chirping song which my husband attributed to *B. carpalis*. Its secretive habits always made it a difficult bird to observe, but it is rather easily recognized by its large size, dark brown upperparts, the black markings on the breast, and the white shoulder patch which is evident in flight. In a papyrus swamp in Queen Elizabeth Park, Uganda, along the Kazinga Channel, we watched and listened to *carpalis* in April 1956. In south western Uganda, just west of Kabale, again in papyrus at 6,200 ft., we heard the song repeatedly in December 1956 and again in February 1957. It was also heard many times in a similar area 45 miles southwest of Mbarara, at 4,800 ft., but the bird could not be seen.

Eventually through the efforts of Boniface Mulimbwa, our Congolese assistant, eight specimens (five males; three females) were collected from the marsh near Lwiro, at 5,200 ft. With Boniface we had verified the presence of *carpalis* in this marsh and directed his attention to its song. Although *carpalis* is usually associated with papyrus swamps, the habitat of the original specimens and those collected in Uganda and Kenya, the present series was taken from elephant grass and broad-leaved sedges. In the same marsh we also collected *B. baboecala centralis*, and its presence there provided an opportunity to compare the calls of the two species, which are well described by Chapin (1953: 433, 436).

When comparing the Lwiro specimens of *carpalis* with those of the type series, one can observe a difference in their appearance. The underparts of the Lwiro birds are whiter, and the black markings on the chest seem heavier and more extensive. The tone of brown on back and tail is deeper in the more recently collected specimens. The measurements of the Lwiro birds exceed those of the birds from the Uele. While the two populations seem to differ, the size difference is small and that in colour perhaps in part at least is the result of foxing. The opportunity to compare our Kivu birds with recent material was provided by Mr. A. D. Forbes-Watson of the National Museum of Kenya, who kindly sent two specimens from the Britton/Harper series taken at Lake Kanyaboli, Kenya. The specimens from Kenya and Lwiro are comparable in colour; they differ only in size. Measurements in millimetres follow:—

Male	*Wing*	*Tail*	*Culmen from base*	*Tarsus*	*Hindtoe & claw*
Type series (Uele Distr.)	67–72	69–75	18–19	27–28	18–21·5
Type of *yokanae* (now in AMNH)	70	73	20	28	21
L. Kanyaboli, Kenya	70–72	73–76	18–18·5		
Lwiro, Kivu Distr.	73–76	76–78·5	18·5–19·5	29–30	19–21
Female					
Type series (Uele Distr.)	68	67	18	26	18
L. Kanyaboli, Kenya	66–69	66–74	17–18·5		
Lwiro, Kivu District	71–73	74–76	18–19	27·5–29	19–21

We have weights for only two of the birds taken at Lwiro: male, testes enlarged, 12th Dec. 1957, 27 g; female, ovary somewhat enlarged, 12th Dec.

1957, 25 g. The measurements of the Kenya specimens are from Britton & Harper (1969).

Sedge warblers like *Bradypterus* seem always to be in worn plumage or moulting, so that small differences in wing and tail measurements, such as these, do not justify recognition by a subspecific name. This material, however, extends the range of *carpalis* to the Kivu and establishes that its habitat is not exclusively papyrus.

(2) *Bradypterus graueri* Neumann

The relationship of *B. graueri*, *carpalis*, and *grandis* has been somewhat uncertain. White (1960: 430, footnote) maintained that all three are conspecific, with *graueri* as the oldest name. Britton & Harper (1969) and Britton (1970) have accepted his opinion by writing of *carpalis* as a race of *graueri*. Hall & Moreau (1962, 1970), however, following Chapin (1953) and Rand *et al.* (1959), "regard all three as distinct, though related species, forming a superspecies". This opinion seems to be supported by the acquisition of more material in recent years.

The American Museum of Natural History, N.Y., now has three additional specimens of *graueri* from near the type-locality, collected by J. P. Chapin just north of Alimbongo, Kivu District, at 7,200 ft.; and an adult male from the Rugege Forest, Rwanda, taken at 7,550 ft., 67 km west of Butare (formerly Astrida). Dr. A. Prigogine has secured a dozen specimens from the mountains west of Lake Kivu at altitudes from 7,086 to 7,546 ft. for the Musée Royal de l'Afrique Centrale (Schouteden 1969 and Prigogine *in litt.*). In the same museum is another specimen from the Rugege Forest, Rwanda (Schouteden 1969). Friedmann & Williams (1968) reported 12 examples from the Impenetrable Forest, Uganda, secured in mist nets at 6,750 ft.

Although not as yet found together, *graueri* and *carpalis* occur in Rwanda at localities that are separated by less than 50 miles, but at different altitudes. The Bwindi Swamp of the Impenetrable Forest, where *graueri* was secured, is not much farther from Kabale, Mbarara, and the Kazinga Channel, where we have heard *carpalis* on several occasions.

In its relatively longer, more graduated tail of twelve feathers, and the lack of a white shoulder-patch, adult *graueri* is unlike *carpalis* in appearance. Britton (1970) has described the immature of *carpalis* as having the underparts "dusky brown, being especially dark on the flanks, sides of breast, vent and legs, and entirely lacking the adult's white centre to breast and belly". This contrasts markedly with the description of an immature *graueri*, quoted from Chapin's manuscript notes: "13 Aug. 1959. Prigogine sent also one *Bradypterus graueri*, male juv. (skull still soft to touch) taken at Nyawarongo [Kivu District] on 24 Feb. 1959. It looked to me at first like *B. baboecala*, because of the narrower spots on chest; but it has wing 62 mm., tail 70 mm., culmen to base 13 mm. It is thus too large for *baboecala*. The light superciliary line goes back behind the eye as in *graueri*, and it has no pale yellowish tinge on throat as in juvenile *baboecala* [our specimen from Lwiro, 5,500 ft., 25 June 1957]. But there is the faintest suggestion of a pale yellow tint on lower breast. I doubt that I have ever seen a young *graueri* before." An immature male in our Kivu collection from near Alimbongo, 5th Oct. 1955, does retain some pale yellowish feathers on the lower abdomen, which is mainly white; the flank feathers are cinnamon brown.

Dr. Prigogine has kindly arranged for me to re-examine the "subadult male" referred to above. It has no evidence of spots on the throat, and the

chest-markings are narrower and less pronounced than those of the young male in our collection. His specimen may be wrongly sexed, because the adult male and female (in breeding condition) in our series do exhibit such a difference; in fact the throat of the female is almost pure white. This conforms to Chapin's earlier observation (1953: 434): "In the male the spots extend to the throat, but *there* they are *much smaller in the female*" (italics mine). Friedmann & Williams (1968: 29) find no such sexual difference in their specimens, but have misinterpreted Chapin's statement.

I am grateful to Dean Amadon of the American Museum of Natural History for reading this paper and providing helpful suggestions. Other colleagues in the Department of Ornithology have also given advice and assistance; but I am indebted most of all to James P. Chapin, who taught me to know and love the birds of Central Africa.

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A Discography of Bird Sound from the Oriental Zoogeographical Region

by Jeffery Boswall

Received 14th September, 1973

This paper is the fifth to be published of a number of projected papers, each covering a major geographical region of the world. For the Palearctic Region see Boswall (1964, 1966, 1969a, 1969b, 1970, 1971) and Sellar (1973); for Australasia see Boswall (1965); and for the Ethiopian Region, Boswall & North (1967); and for the Antarctic, Boswall & Prytherch (1969). A Neotropical discography is under way (Boswall & Freeman in prep.) and it is hoped soon to complete global coverage with a Nearctic discography.

In the Oriental Region the first bird recording was probably that of a hornbill (*Tockus* sp.) made by the Coolidge–Carpenter expedition (Carpenter 1940). Since then, a number of workers have recorded sound production by birds in a number of countries within this region. For example, Burton (1969, 1971) includes in his catalogue a few recordings by Ivan Polunin from Malaya, Singapore and Borneo; also from Borneo Lord Medway's recordings of Low's Swiftlet *Collocalia maxima*. More recently, the BBC Sound Archives (J. F. Burton pers. comm.) brought in some recordings made by Philip Wayre on the Bhutan/Assam border, and some from Malaya by T. C. White. Also, BBC sound recordist John Davies made a number of recordings in Borneo in June 1972, and Lyndon Bird, also of the BBC, recorded a number of birds in Indonesia and East Malaysia (Borneo) in February, March and April 1973. It is hoped that some of these will also eventually be included in the BBC's Sound Archives.

The commonness and portability of tape recorders must mean that many ornithologists have recorded sound production by birds in the Oriental Region over the last ten or fifteen years. It is beyond the scope of this paper to try to trace private collections. A few examples will suffice. L. P. Ferdinand (pers. comm.), a member of the Danish "Nooma Dan" expedition, taped about twenty species in the South Phillipines. Tom Harrison (pers. comm.), operating from the Sarawak Museum in Sarawak, made a number of recordings—especially hornbills, owls and bulbuls in the 1950's. M. A. Bradshah of Madras in India started a collection in 1966. Lord Fermoy made a number of recordings during the expedition to Pakistan led by Mountfort (1969). D. V. Manning presented recordings of some Malayan bird calls to a meeting of the British Ornithologists' Club on 23rd January 1968 (not 1967 as printed in *Bull. Brit. Orn. Cl.* 88: 21).

The discography: The series of papers of which this is one is primarily concerned with commercially published gramophone records. For the Orient there are only three:—

1. Teeuwen, Gus. 1970. *Jungle Memories*. One 12-inch 33·3 r.p.m. disc, no. LP 0808. Singapore: Guson (obtainable from: P.M. Films, 26 Penn Meadow, Stoke Poges, Bucks, England).

Twenty-two bird species can be heard on this record, along with two mammals, an amphibian and a chorus of cicadas. Of particular beauty is the song of the Common Shama, and the incredibly pure tones arranged in a melody by the Plain Babbler. It is interesting to hear a recording from the wild of that common cage bird, the Hill Myna. Lengthy, well-informed introductions are spoken by Arthur Gick.

Side 1: Malaysian Eared Nightjar *Eurostopodus temminckii;* White-handed Gibbon *Hylobates lar;* Cicada chorus Cicadiidae; Common Shama *Copsychus malabaricus;* Long-tailed Parakeet *Psittacula longicauda;* Hill Myna or Tiong *Gracula religiosa;* Plain Babbler *Malacopteron affine;* Large Racket-tailed Drongo *Dicrurus paradiseus:* Little Barbet *Megalaima australis;* Large-footed Wren Babbler *Napothera macrodactyla;* Black Hornbill *Anthracoceros malayanus;* White-throated Bulbul *Criniger phaeocephalus.*

Side 2: Black Crested Magpie *Platysmurus leucopterus;* Frog sp. *Rana erythraea;* Serpent Eagle *Spilornis cheela;* Red-rumped Tree Babbler *Stachyris maculata;* White-bellied Black Woodpecker *Dryocopus javensis;* Red-headed Tailor Bird *Orthotomus sepium;* Black-necked Tree Babbler *Stachyris nigricollis;* Scrub Bulbul *Criniger bres;* Indian Cuckoo *Cuculus micropterus;* Black Siamang *Hylobates syndactylus;* Chestnut-capped Laughing Thrush *Garrulax mitratus;* Red-bearded Bee-eater *Nyctiornis amicta;* Muller's Barbet *Megalaima oorti;* Large Hawk Cuckoo *Cuculus sparverioides.*

2. Teeuwen, Gus. 1970. *Jungle Fascination.* One 12-inch 33·3 r.p.m. disc. no. LP 0809. Singapore: Guson (obtainable as for disc 1.)

The twenty-two recordings include sixteen birds, four mammals, a reptile and a chorus of amphibians. The Common Shama and the Black Siamang are repeated from the disc reviewed above.

Side 1: Black Siamang *Hylobates syndactylus;* Mountain Imperial Pigeon *Ducula badia;* Yellow-crowned Bulbul *Pycnonotus zeylanicus;* Abbott's Jungle Babbler *Trichastoma abbotti;* Grey-bellied Squirrel *Callosciurus caniceps;* Bronzed Drongo *Dicrurus aenus;* Pygmy Owlet *Glaucidium brodiei;* Rhinoceros Hornbill *Buceros rhinoceros;* Golden Tree Babbler *Stachyris chrysaea;* Large Scimitar Babbler *Pomatorhinus hypoleucos;* a gecko *Gecko stentor.*

Side 2: Common Shama *Copsychus malabaricus;* Banded Leaf Monkey *Presbytis melalophos;* Little Cuckoo Dove *Macropygia ruficeps;* Ashy-naped Tailorbird *Orthotomus cucullatus;* Red-headed Laughing Thrush *Garrulax erythrocephalus;* Frog spp. *Phrynella pollicaris* and others; Long-billed Partridge *Rhizothera longirostris;* Malay Peacock Pheasant *Polyplectron malacenis;* Fire-tufted Barbet *Psilopogon pyrolophus;* Long-tailed Nightjar *Caprimulgus macrurus;* Tiger *Panthera tigris.*

3. Teeuwen, Gus. 1971. *Taman Negara (Malaysia's National Park).* One 7-inch 45 r.p.m. disc, no. SP 0810, incorporating 20 page booklet. Singapore: Guson (obtainable as for disc 1).

Twelve birds sing from this record. There is no human voice. Nor, incidentally, is there any indication of the speed at which the record should be played; however, by comparing the recording of Abbott's Jungle Babbler on this record with the same species on the second disc above (side 1), it is clear that this disc should be played at 45 r.p.m. This most helpfully devised little publication includes maps, botanical photographs, a bibliography and hints to park visitors!

Side 1: Magpie Robin *Copsychus saularis;* Abbott's Jungle Babbler *Trichastoma abbotti;* Red-rumped Trogon *Harpactes duvauceli;* Cicada Cicadiidae; Paradise Flycatcher *Terpsiphone paradisi;* Great Argus Pheasant *Argusianus argus;* Yellow-crowned Bulbul *Pycnonotus zeylanicus.*

Side 2: Changeable Hawk-Eagle *Spizaetus cirrhatus;* Malaysian Black-headed Oriole *Oriolus xanthonotus;* Slender-billed Crow *Corvus enca;* Common Shama *Copsychus malabaricus;* Black Crested Magpie *Platysmurus leucopterus,* Bushy-crested Hornbill *Anorrhinus galeritus.*

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Rufous phase Senegal Coucals in southwest Nigeria: an illustration of Gloger's Rule

by J. H. Elgood

Received 11th September, 1973

There is no doubt that the percentage of dark rufous Senegal Coucals *Centropus senegalensis*, formerly regarded as a distinct species *C. epomidis*, diminishes with distance inland from the Nigerian coast, a diminution paralleled by a decrease in the average rainfall.

Although there were several earlier suggestions that the dark "Rufous-bellied Coucal, *Centropus epomidis* Bonaparte 1850" was only a melanic form of the Senegal Coucal, *C. senegalensis* (L.) 1766, this view was only finally accepted when Elgood (1955) produced evidence of interbreeding of the two forms at Ibadan. Thus Hall & Moreau (1962), quoting Elgood, listed *epomidis* in an appendix of rejected species, while White (1965) stated categorically that *epomidis* is a rufous form of *senegalensis*.

My observations on the dark form at Ibadan showed that 16% of all observed coucals were of the *epomidis* type. During a recent visit to Lagos University, in early 1972, it was found that 28 out of 65 coucals (43%) were rufous birds. The most northerly known records of the *epomidis* form are from Oyo and Iwo, both about 50 km north of Ibadan. Further north still, at Ilorin, 150 km north of Ibadan, no melanic individual was ever observed during a number of extensive visits to the area, where the normal form of *senegalensis* is abundant.

Unfortunately no strictly comparable rainfall data are available, but the following is a summary of the facts:—

Station	*Distance from coast*	*Rainfall belt*	*"epomidis" coucals*
Lagos University	10 km	150–200 mm	43%
Ibadan	120 km	100–150 mm	16%
Oyo and Iwo	170 km	100–150 mm	present
Ilorin	270 km	50–100 mm	absent

If one postulates a direct relationship between percentage occurrence of dark birds and rainfall, as indicated by distance from the coast, the data from Lagos and Ibadan suggest *epomidis* will occur only to a distance of about 200 km from the coast, a hypothesis fully supported by the findings at Oyo, Iwo and Ilorin.

However sparse the data, it seems clear that the percentage of rufous coucals in southwest Nigeria diminishes rapidly from the humid coastal belt as rainfall decreases progressively inland. Although Gloger's Rule, as most often formulated, states that average pigmentation is heavier in populations from more humid areas, lighter in those from more arid ones it is only an extension of this concept to consider the proportion of dark forms instead of average individual darkness, as a manifestation thereof.

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The eggs of *Carpococcyx renauldi*

by Michael Walters

Receeved 12th October, 1973

Recently four eggs of Renauld's Ground Cuckoo *Carpococcyx renauldi*, of southern and eastern Siam and Indochina, were presented to the British Museum (Natural History), Tring, by L. W. Hall, of "Birdland", Bourton-on-the-Water. The eggs, which had not been incubated, were laid by a captive female in the summer of 1973. They are oval and tapered slightly at one end, resembling the egg of a domestic fowl in shape, except one egg which is a pure oval. They are white, with a rough-textured surface and are not glossy. They measure respectively 61·3 × 43·7; 60·8 × 44·3; 62·8 × 45·3; and 62·8 × 45·5 mm.

The only reference to the eggs of this species in the literature appears to be in Meise (1964). A single egg in the Rothschild collection at Tring measuring 44·4 × 34·0 mm is referred to. This egg cannot at present be traced, but its identity would now seem to be in doubt.

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The Common Snipe *Gallinago gallinago* in Zambia

by E. L. Button

Received 27th October, 1973

Benson, Brooke, Dowsett & Irwin (1970, *Arnoldia*, *Rhodesia* 4(40): 13) quote a statement by White (1945, *Ibis* 87: 466) that I collected *Gallinago gallinago* at Ndola, Zambia. But in the absence of a preserved specimen in the Academy of Natural Sciences, Philadelphia, to which I sent many specimens, or apparently anywhere else from Zambia, they were unable to accept the occurrence of this species in the territory as being certain. This decision was duly reflected by the same authors (1971, *The Birds of Zambia*. London: Collins), in which the species was placed in brackets.

Major Melvin A. Traylor (pers. comm., 15th Feb. 1973) has confirmed to me that there are six specimens of *G. gallinago* in the Field Museum of Natural History, Chicago, collected by myself in the Itawa Swamp, Ndola, viz.: 2♂♂, 16th/18th Jan. 1944; ♀, 24th Feb. 1944; ♂, 2nd Mar. 1944; ♀, 11th Nov. 1944; ♀, 21st Jan. 1945. There are also in the same museum from the Itawa Swamp four specimens of *G. media* and 11 of *G. nigripennis*, also collected by myself. Indeed there is a considerable collection of birds in Chicago made by me in Zambia, as well as in Philadelphia.

In view of this material evidence, the occurrence of *G. gallinago* in Zambia is clearly acceptable. Nor does there appear to be reason to question the records by Tree (1966, *Ostrich* 37: 186) of birds handled or seen at the Mindola Dam, North Kafue Basin, which Benson *et al.* also felt to be uncertain. I did in fact also collect both *G. gallinago* and *nigripennis* at Solwezi in January 1961, although I did not retain any specimens.

Night Herons in Wallacea

by C. M. N. White

Received 26th September, 1973

Wallacea is used here as a convenient short designation for the Indonesian islands which lie between the Sunda Shelf (boundary of continental south-east Asia) and the Sahul Shelf (boundary of continental Australia and New Guinea). The western boundary is also well known as Wallace's Line. Darlington (1957: 462–473) has discussed and commended the use of Wallacea to denote these islands although he did not originate the term which had been first used nearly thirty years earlier. I use the term only as a concise geographical designation without implying a zoogeographical region or subregion.

Nycticorax caledonicus hilli Mathews evidently occurs throughout Wallacea having been recorded from at least twenty-eight islands. It may be scarce in the Lesser Sundas west of Timor and Savu for there is only a single record from Flores, but as it is known to breed in east Java, it seems more likely to have been overlooked by collectors. Birds from Wallacea agree with the Australian form *hilli*, although occasional examples in Celebes show intergradation towards the darker Philippine *manillensis*. An abnormally dark bird from Kema, Minahassa, north Celebes, was named *Nycticorax minahassae* Meyer & Wiglesworth but later its authors placed it as a synonym of *manillensis*. Amadon (1942: 6) also places it as a synonym of *manillensis* but as other examples from north Celebes agree with *hilli*, it should be more correctly united with the latter which it would antedate and replace.

Bock (1956) considers that *N. nycticorax* and *N. caledonicus* form a super-species. *N. nycticorax* has been recorded twice in Wallacea. There is one record from Flores which is most likely a wanderer from Java or elsewhere in Malaysia where *N. nycticorax* breeds. More remarkable is the occurrence in the region of Gorontalo in north Celebes. Stresemann (1941: 10) merely remarks that it very likely breeds at Lake Limbotto but gives no additional information. Coomans de Ruiter (1948: 80–82) suggests that in fact both *caledonicus* and *nycticorax* are widely sympatric in Celebes and was unable therefore to identify specifically the birds he saw in south Celebes. Hoogerwerf (1966: 84) also refers to the two species occurring "alongside each other" in Celebes. The actual situation is however quite different, for *N. nycticorax* is only known from a number of specimens, mostly over a century old, from the northern peninsula of Celebes. I am very grateful to Dr. G. F. Mees for kindly giving me details of the material in the Leiden Museum. There are nine specimens of *N. nycticorax*: a male collected by Forsten about 1840: two males, two females and a juvenile female collected in July and August 1863 by v. Rosenberg at Ayer Pannas, and a juvenile male collected by the same at Panybie in September: also two unsexed adults, one from Limbotto in January and another from Menado, undated. The birds obtained by v. Rosenberg are of most importance, for the same collector also obtained two juvenile *N. caledonicus* in September 1863 at Limbotto and Panybie. Dr. Mees points out that these juveniles of both species are in spotted plumage but would have been fully able to fly. There is thus no evidence at all that the two species of *Nycticorax* are widely sympatric in Celebes, and only the specimens collected in 1863 indicate that at that time both species may have been breeding together in the northern tip of Celebes.

Since *N. nycticorax* and *N. caledonicus* are both often cited as breeding in the Philippines, similar sympatry just to the south in north Celebes would not be surprising. However duPont (1971: 22) states that *N. nycticorax* is only a migrant from Asia to the Philippines, and Professor D. S. Rabor has kindly informed me that he, in 39 years of field work in the Philippines, has never found any evidence that it breeds: he personally believes that it is only a winter migrant. Thus the suspected sympatric breeding in north Celebes becomes more remarkable. Confirmation or otherwise of this would be very desirable, but after a gap of over a century conditions may have changed and breeding colonies ceased to exist. In the meantime the evidence for this supposed sympatric breeding is circumstantial only, and relates to 1863.

It is perhaps worth noting that the tropical Asian night heron, *Gorsachius melanolophus*, has not been recorded from Wallacea but that migrants of the Japanese *G. goisagi* have been recorded from Celebes and Halmahera.

Hoogerwerf (1966) has described the occurrence of odd examples of *N. caledonicus* in a large breeding colony of *N. nycticorax* in west Java, and apparent hybridisation with the latter. There was no indication of a mixed breeding colony. In Borneo *N. nycticorax* occurs widely and there are a few records of *N. caledonicus* in Sabah in the north but no evidence that they were breeding. Professor Rabor kindly informs me that he has observed *N. caledonicus* throughout the Sulu Archipelago up to the Borneo border so that Sabah birds might be visitors from this source. Thus all the evidence points to allopatry between *nycticorax* and *caledonicus* being virtually complete. These extralimital data such as they are only serve to emphasise that if a mixed breeding colony existed in north Celebes in 1863 it was exceptional.

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CONTRIBUTORS

Contributions are not restricted to members of the Club. They should be addressed personally to the Editor, C. W. Benson, Department of Zoology, Downing Street, Cambridge. Contributions are accepted on condition that sole publication is offered in the first instance to this *Bulletin*. They should be type-written, double-spaced, with wide margins, on one side of the paper, and submitted in duplicate.

References to literature should be in the same format as in the notice to contributors to the *Ibis* (see any 1972 number). Considerations similar to those in the *Ibis* notice also apply in regard to nomenclature, scientific names of species and genera, and illustrations including photographs. But illustrations including photographs can only normally be considered if the contributor is willing to pay for the cost of their reproduction.

Contributors introducing a new name or describing a new form should append *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In such a description, the introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further headings as required.

Contributors are entitled to a maximum of ten free copies of the number of the *Bulletin* in which their contribution appears, provided that it exceeds one page of the *Bulletin*. Extra copies at cost price can be ordered through the Editor at the time of submission of the manuscript.

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BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY
C. W. BENSON
HUGH F. I. ELLIOTT

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1974

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PREFACE

The quarterly publication and size of the issues which comprise the present volume of the *Bulletin* (totalling 176 pp.) have continued on the basis established in 1973. The only minor change, made for convenience of reference and record, is the resumption of the practice, last followed in Vol. 89 (1969), of listing the membership of the Club's committee.

The first two issues of 1974 were edited by Mr. C. W. Benson, prior to his retirement after five years in office, during which he set an example of editorial skill and thoroughness that would have been quite impossible to follow but for the help and guidance he so freely gave when handing over. For this, for much subsequent support and, not least, for preparing with the customary and able assistance of Mrs. M. Hawksley, the Scientific Index for this volume, I am extremely grateful.

As before thanks are due to all who have so kindly advised the editors on papers offered for publication, including Dr. D. Amadon, Dr. W. R. P. Bourne, Mr. P. R. Colston, Dr. C. H. Fry, Mr. I. C. J. Galbraith, Mr. D. Goodwin, Mr. M. P. Stuart Irwin, Dr. A. C. Kemp, Capt. C. R. S. Pitman, Prof. W. H. Thorpe, Mr. R. Wagstaffe and Mr. C. M. N. White; and likewise to Mr. K. E. Wiltsher, Manager of the Caxton and Holmesdale Press, and his staff for maintaining standards and punctuality of production of the *Bulletin* despite a difficult year for the printing industry.

HUGH F. I. ELLIOTT

COMMITTEE

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(Compiled by the Hon. Secretary)

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Resignations

Houston, W. H.
Johnson, F. E. B.
Lees-Smith, D. T.
Patrick, G. L. A.
Peall, Mrs. O.
Russell, J. A. S.
Sales, V. A. D.
Searight, R. G.
Wise, A. J.

Deaths

The Committee much regrets to record the deaths of the following members:—
Colonel the Right Reverend Monsignor F. O. Cave, o.b.e., m.c.
Miss J. M. Ferrier
Captain P. R. Foulkes-Roberts, m.c.
Miss M. V. Gilbert
Mr. J. M. D. Mackenzie, b.a.
Mr. C. W. Mackworth-Praed, o.b.e., m.a. (Honorary Secretary and Treasurer 1922–1923 and 1929–1935, Honorary Treasurer 1935–1936, Vice-Chairman 1945–1946, Chairman 1956–1959).
Professor H. Schouteden

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by C. W. Benson with the assistance of Mrs. M. Hawksley)

All generic and specific names (of birds only) are indexed. Subspecific names are included only if new and are also indexed in bold print under the generic and the specific names.

Corrigenda

p. 15, line 33: Insert inverted commas after 'specimen'

p. 49, line 5: '*dubius*', not '*dubia*'

p. 80, line 20: '*mariae*', not '*mariei*'

p. 95, line 23: '*Sphenoeacus*', not '*Sphenoaecus*'

p. 95, line 25: '*Camaroptera*', not '*Cameroptera*'

p. 136, line 9: '*phasianinus*', not '*phasianus*'

p. 170, penultimate line: '*rueppellii*', not '*ruppelli*'

p. 171, line 1: '*castanotus*', not '*castonotus*'

p. 171, line 43: '*retzii*', not '*netzii*'

p. 173, table: '*Haliaeetus*', not '*Haliaaetus*'

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Bulletin of the

British Ornithologists' Club

Edited by

C. W. BENSON

Volume 94 No. 1 March 1974

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 94 No. 1 Published: 20 March, 1974

The six hundred and eighty-fifth meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 27th November 1973 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E., present 16 members and 6 guests.

The speaker was Dr. Jan Wattel who addressed the Club on Moult in relation to life cycle in some non-passerines and illustrated his talk with slides.

The six hundred and eighty-sixth meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 15th January 1974 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E., present 26 members and 18 guests.

The speaker was Sir Peter Scott, C.B.E., D.S.C., who addressed the Club on Individuality in birds and illustrated his talk with slides of Bewick's Swans *Cygnus bewickii* and other wildfowl.

Report of the Committee for 1973

Six meetings of the Club were held in 1973, all at the Café Royal. The number of members and guests attending was 176, compared with 191 in 1972. Despite a prospective increase of charges in 1974, the advantages of the Café Royal as a venue were considered, after due investigation, to justify a continuation of present arrangements, except possibly for holding one Buffet Supper meeting (probably in July).

Leaflets, which described the advantages of membership of the Club and, for those ineligible to join as members, of subscription to the *Bulletin*, were enclosed in the July 1973 number of *Ibis* and have contributed to the satisfactory numbers of 30 new members and five new non-member subscribers to the *Bulletin* in 1973. The Committee regrets to report the death of two members, Mr. R. P. Borrett and Mr. K. D. Smith, and there were three resignations, whilst the membership of seven members was terminated under Rule 4. There was thus an increase in membership of 18. An increased number of members and of non-member subscribers is important for the financial stability of the Club. The leaflet is continuing to bring in some new members and subscribers but it is hoped that members will recommend membership of the Club or subscription to the *Bulletin* (£3·50 p.a. for non-members) to friends or institutions who may possibly be interested.

Four numbers of the *Bulletin* were published in 1973, with a total of 176 pages. Arrangements have now been made for authors of papers exceeding one page in the *Bulletin* to obtain separates of them and 16 separates will be supplied free in respect of each such paper, commencing with the March 1974 number of the *Bulletin*. Mr. C. W. Benson ends his term of office as Editor at the Annual General Meeting. He is unable to stand for re-election owing to the pressure of other work over the next year. Sir Hugh Elliott has

agreed to be nominated as Editor but hopes to be able to resign in favour of Mr. Benson if the latter feels able to accept nomination in 1975.

Copies of the Accounts will be available at the Annual General Meeting and will be published subsequently in the *Bulletin*. It is not possible to comment here in detail on the financial position, as this Report must go to press before the Accounts are available. It is expected, however, that there will be a deficit on the year, as sales of back-numbers of the *Bulletin* have not reached the abnormally high figure of 1972. Difficulty has been caused in recent years by members who have not paid subscriptions due or who have paid only at a lower rate than has become current (£2·50 p.a.). Steps are being taken to reduce the loss from this cause and it is satisfactory to report that in several cases arrears have already been paid. In view of the Club's need for support, to meet costs which still tend to increase despite the saving made by quarterly publication of the *Bulletin*, it is much to be hoped that the process will continue.

Notes on the Grey-breasted Crake *Laterallus exilis*

by F. Haverschmidt

Received 5th November, 1973

In Surinam *Laterallus exilis* is not uncommon in densely overgrown marshes where it is usually only seen when flushed and flying off with dangling legs low over the vegetation to alight within a short distance (Haverschmidt 1968). Hence it is difficult to collect. In these rather wet places it is often in company with the still smaller Yellow-breasted Crake *Porzana flaviventer*.

In December 1972 I established that it also inhabits a totally different dry habitat. On the outskirts of rapidly expanding Paramaribo there is a large house building project on the former plantations Tourtonne and Ma Retraite. Streets had been built, and between them were open plots, well drained and dry, of area about 200 by 100 metres and thickly overgrown with tall grass to a height of about one metre. On 23 December a mowing machine was cutting grass, starting at the outside and steadily moving inward. When only a narrow strip of tall grass was left, a crowd of small boys followed, running on each side of the machine. Repeatedly a small crake rose from the remaining grass, fluttered a short distance to plane down a few metres farther on the open ground when it was immediately covered by a bunch of the boys and easily captured. Very few birds escaped, and within five minutes I had four birds. On 27 December two machines were at work in the same area, five more birds being taken, and on 30 December I obtained another one. The number of crakes in these extensive grass fields must indeed have been very large. No other species of crake was observed or captured. The only other bird inhabiting these fields in large numbers was the Blue-black Grassquit *Volatinia jacarina*.

Of this series of 10 specimens, five were males and five females, and nine were in adult plumage. Four males and four females were in breeding condition, the males with greatly enlarged testes and females with enlarged ovaries. One female (27 December) held a fully developed, although unshelled, egg in the oviduct. So it was obvious that these specimens had been captured in the breeding season. Previously, on 4 March 1961, I had obtained two nestlings still completely in black down. In plumage, the immature specimen (male) lacks the chestnut on the nape, hindneck and mantle. It is uniform plain brown on the upperparts, except for the grey crown. Two other immature specimens which I collected on 22 and 29 January 1961 are similar. There is great variation in

the pale barring on the wing coverts. In only one male is it prominent, and on four females it is very faint. In the others—one male and four females, including the immature—the wing coverts are plain brown with no barring at all. Although generally similar in colour, the males are easily distinguishable by the somewhat darker grey on the breast, contrasting more strongly with the white throat than in the females.

The iris was red with an orange eyelid, the legs ochre yellow. In the adults the upper mandible was horn brown except for the lower part of the base, which was greenish yellow (as in illuminating paint), extending to the nostrils. The lower mandible was also the same greenish yellow. In immatures the upper mandible was wholly horn brown, and the greenish yellow was only faintly apparent on the lower mandible.

As eight out of the nine birds in adult plumage were in breeding condition, it is somewhat strange that one of these nine (adult female, 27 December) was moulting all its primaries, all still in sheath, so that at this time it would have been unable to fly. It is clear that the wing moult of *Laterallus exilis* is synchronous as in *L. melanophaius* but different from *L. viridis* (Stresemann & Stresemann 1966). This moulting female was the only adult in the series which was not in breeding condition.

Some of the small South American crakes may be wanderers, as was established by Beebe (1947) for *Neocrex erythrops* in Venezuela. Two records from Surinam suggest that this may also apply to *L. exilis*, since I received two females (2 July 1960 and 13 February 1962) that had been captured at night at lighted houses in Paramaribo.

My 10 specimens weighed: 5♂♂ 32·4 – 37·7 (34·6) g, 5♀♀ 28·9 – 39·0 (34·0) g. The heaviest female was the one which had an unshelled egg in the oviduct.

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The Whale-headed Stork in Ethiopia

by Fred Duckworth

Received 3rd July, 1973

Mr. T. Mattanovich reported seeing the Whale-headed Stork *Balaeniceps rex* Gould along the Baro River in western Ethiopia, west of Gambela, both in the rains (May–October) and in the dry season (November–April). This was duly recorded by Urban (1967) and again by Urban & Brown (1971).

While on safari in the Gambela District in the first fortnight of April 1973 I saw Whale-headed Storks as follows:—firstly, at the Ubela Waterhole freshwater reedbeds, 7°30′N, 34°03′E, one bird; secondly, a few days later, in similar habitat just north of Tedo, 7°55′N, 34°03′E, two pairs together. On both occasions the birds were very shy, allowing an approach no closer than 75 metres. But both times I was able to obtain a photograph and so positively confirm the occurrence of this species in Ethiopia. Local information is that the Whale-headed Stork is resident in Gambela, although there is not yet a breeding record.

References:
Urban, Emil K. 1967. Possible occurrence of the Whale-headed Stork in Ethiopia. *Journ. E. Afr. Nat. Hist. Soc.* 26(2): 87–88.
Urban, Emil K. & Brown, Leslie H. 1971. *A checklist of the birds of Ethiopia.* Addis Ababa: Haile Sellassie I Univ. Press.
[The author of the above note is a Regional Wild Life Warden in Ethiopia Copies of the two photographs which he obtained, unquestionably of *Balaeniceps rex*, have been deposited in the University Museum of Zoology, Cambridge.—Ed.].

Cyanoramphus malherbi, is it a colour morph of *C. auriceps*?

by D. T. Holyoak

Received 22nd October, 1973

The Orange-fronted Parakeet *Cyanoramphus malherbi* of New Zealand has been treated as a valid species by almost every authority since it was first described by De Souance in 1857. Examination of museum specimens and a search of the literature have convinced me that the taxonomic status of this bird needs to be reassessed. This paper discusses the available evidence bearing on the relationship of *C. malherbi* and the Yellow-fronted Parakeet *C. auriceps auriceps*, leading to the conclusion that *C. malherbi* is probably a colour morph of *C. a. auriceps*, although direct proof is lacking.

Size and Structure: Oliver (1955), Falla *et al.* (1970) and Harrison (1970) quote early accounts which describe *C. malherbi* as slightly smaller than *C. a. auriceps*, with a smaller, more slender, bill. The ranges of measurements quoted by Oliver seem to confirm this size difference, but they do not agree with my own measurements (cf. Table I). Table I gives data suggesting that bill-length measurements of both forms are bimodally distributed. The two peaks presumably correspond to a sexual dimorphism in size, but few accurately sexed specimens are available to test this hypothesis. Wing-length measurements may also be bimodally distributed, but with much more overlap than those for bill-length. Statistical testing shows a high probabliity of both sets of measurements being representative of the same population (Table I).

TABLE 1

Measurements of *Cyanoramphus malherbi* and *C. auriceps auriceps*. Because few accurately sexed specimens are available all measurements for each form are listed together. × = mean, n = sample size, s = standard deviation.

Bill length (mm)

9	10	11	12	13	14	15	16	×	n	s	× ± 2s
C. malherbi											
0	1	5	4	3	5	1	0	12·4	19	1·39	9·6–15·2
C. a. auriceps											
1	1	10	1	3	11	3	2	12·7	32	1·82	9·1–16·3

Wing length (mm)

100–101	102–103	104–105	106–107	108–109	110–111	112–113	114–115	116–117	×	n	s	× ± 2s
C. malherbi												
3	2	5	1	5	1	0	1	0	107	18	3·67	99–114
C. a. auriceps												
3	4	5	7	4	4	2	2	4	108	35	4·82	98–117

Fewer comparative measurements of the lengths of tail and tarsus, and of the depth and width of the bill, likewise show no significant differences between *C. malherbi* and *C. a. auriceps*. Nor are there consistent differences in the shape and structure of the bill, legs or feet.

There are neither consistent differences nor large average differences between the two forms in the shape and relative lengths of the individual remiges and rectrices, nor in the rest of the plumage.

Colouration: The usual colouration of the plumage and bare parts of each form may be compared as follows (checked with ten specimens of each form):

	C. a. auriceps	*C. malherbi*
Forehead	scarlet	orange
Crown	golden-yellow	lemon-yellow
Lores	scarlet above, yellow-green below	orange above, light green below
Chin	light yellow-green	light green
Ear-coverts	yellow-green	green
Sides of neck, nape, mantle, back, scapulars, upper tail-coverts	yellow-green	green
Rump	yellow-green with small patch of scarlet-tipped feathers at side	green with small patch of orange-tipped feathers at side
Throat, breast, belly, thighs, under tail-coverts	light yellow-green	light green
Exposed parts of greater, median and lesser wing-coverts	yellow-green	green
Exposed parts of primary-coverts and feathers of alula	deep blue	deep blue
Primaries	blackish-brown with blue on outer webs of outer primaries, turquoise on outer webs of inner primaries	blackish-brown with blue on outer webs of most primaries, a little turquoise on outer webs of innermost
Secondaries	green outer webs	blue-green outer webs on outermost secondaries, green outer webs on others
Lesser underwing-coverts	light green	light blue-green
Greater underwing-coverts	blackish-brown	blackish-brown
Rectrices	middle pair mainly green above, others turquoise and blue above	middle pair mainly green above, others blue with little turquoise
Bill	Blackish-grey with large blue-grey area in middle of upper mandible	blackish-grey with large blue-grey area in middle of upper mandible
Cere	blackish-grey	blackish-grey
Iris	orange-yellow	unknown
Legs and feet	dark grey	dark grey

Yellow plumage colouration in parrots is caused by a little-known "flourescent" pigment, by carotenoids, or by both in some species (Völker 1937, Auber 1957). Blue colouration is caused by the Tyndall effect of scattering of short wave-lengths of light by gas filled vacuoles in the keratin of the feather

(Auber 1957, Dyck 1971). Green colouration is caused by the combination of the Tyndall scattering effect with one or both of the yellow pigments. Red colouration is apparently due to carotenoid pigments (Auber 1957, Fox & Vevers 1960, Dyck 1971).

I have examined museum skins of *C. a. auriceps* and *C. malherbi* in ultra-violet light and could detect flourescence from neither the yellow nor green feathers (the flourescent yellow pigment retains its ability to flouresce in old museum skins: Holyoak unpublished). Hence, from Volker's studies it is apparent that the yellow plumage pigment in these two forms is a carotenoid.

When the descriptions of the colouration of *C. a. auriceps* and *C. malherbi* given above are analysed in terms of this account of pigmentation it is clear that differences in carotenoid pigmentation are sufficient to account for all of the colour differences. To summarise:—

	Heavier carotenoid pigmentation (*C. a. auriceps*)	Lighter carotenoid pigmentation (*C. malherbi*)
Forehead, Rump patches	scarlet	orange
Crown	golden-yellow	lemon-yellow
Green areas of plumage	have strong yellow tint	lack strong yellow tint
Remiges and Rectrices	more extensive green areas (structural blue + yellow carotenoid = green)	some green areas of *C. a. auriceps* replaced by blue (green — yellow carotenoid = blue)

There is widespread evidence that birds judged to be closely related from other characters have shown rapid evolutionary change in carotenoid pigmentation. For example, Cain (1955) described the apparent hybridisation of *Platycercus elegans* (predominantly red plumage) and *P. flaveolus* (predominantly yellow plumage), with *P. "adelaidae"* (predominantly orange plumage) as a stable intermediate form. Holyoak (1973) gives data suggesting that the genera *Platycercus* and *Cyanoramphus* are closely related.

Additional evidence that the extent and colour of avian carotenoid pigmentation can be under simple genetic control is provided by the striking polymorphisms of some shrikes of the genus *Malaconotus* (Moreau & Southern 1958, Hall, Moreau & Galbraith 1966). The apparently simple genetic control of carotenoid pigmentation may in part be due to the inability of birds, like other animals, to synthesise carotenoids (cf. Vevers 1964).

Harrison (1970) states that there are 59 specimens of *C. malherbi* in museums of the world, whereas there must be about 300 of *C. a. auriceps*. When the small total number of specimens of each form is considered, it appears remarkable that so many with unusual colouration have been described, even allowing for the special value that the Victorian collectors attached to "varieties". C. W. Benson (*in litt.*) has described a specimen which has the dull green body colour of *C. malherbi* with the red forehead of *C. a. auriceps* (18/Psi/19/a/6 in the Cambridge Museum Collection). Another intermediate specimen was described as *Cyanoramphus intermedius* Reichenow; from the description of this bird in Salvadori (1891) it appears to have been a typical specimen of *C. a. auriceps*, except that it had the lemon-yellow crown colour of *C. malherbi;* I have been unable to locate the specimen. Harrison (1970) mentions a specimen of *C. malherbi* that Souance described as having a barely distinguishable orange forehead band. Three specimens of *C. a. auriceps* in the Collection of the British

Museum (Natural History) at Tring show plumage differences from the 17 normal specimens of this form in the Collection:—1847.1.8.40 has scarlet tips to many feathers in middle of rump; 1897.11.10.644 has scarlet marks on the golden-yellow crown feathers; 1953.62.2 has a few orange marks on the breast feathers.

Thus, although the colour differences between *C. a. auriceps* and *C. malherbi* seem large at first sight, comparatively small differences in pigmentation are sufficient to account for all of them. These differences are of a kind that seem to be under simple genetic control in the closely related genus, *Platycercus* and are of a similar kind to the phenotypic differences in a classic instance of avian polymorphism in the genus *Malaconotus*. In addition there are two specimens showing some characters of one form with some of the other, and several others showing individual variation in the extent or kind of carotenoid pigmentation.

Range and Status: C. a. auriceps is known from the North and South Islands of New Zealand, Three Kings, Hen Island, Barrier Islands, Kapiti, Solander Islands, Stewart Island and outlying islets, and the Auckland Islands (Fleming 1953, Kinsky *et al.* 1970). *C. a. forbesi*, a much larger representative form of *C. auriceps*, occurs on the Chatham Islands. *C. malherbi* is definitely known only from South Island and Stewart Island; old records from Hen Island and Little Barrier Island lack sufficient supporting detail to be considered fully acceptable and old records from North Island are poorly substantiated (Fleming 1953, Kinsky *et al.* 1970, Harrison 1970). *C. malherbi* has not been reported from any locality on South Island at which *C. a. auriceps* is unknown, and the older unconfirmed reports of this form are all from islands where *C. a. auriceps* is common.

Oliver (1955) and others described a decrease in the status of *C. a. auriceps* and *C. novaezelandiae* on North and South Islands that occurred through the first part of this century. Both species remained common on the smaller outlying islands. Turbott (1967), and the annual lists of New Zealand bird observations published in *Notornis*, suggest that *C. a. auriceps* has regained much lost ground in the last few decades, so that it is now quite common in the larger forest tracts; *C. novaezelandiae* has remained rare.

Harrison (1970) summarises all of the known records of *C. malherbi*, of which there were numerous reports in the nineteenth century, but only seven this century, in 1904, 1913, 1928, then a gap until 1949, 1955, 1963 and 1965. Generally, it appears that the decrease of *C. malherbi* approximately coincided with those of *C. a. auriceps* and *C. novaezelandiae*, although it appears to have always been rarer than those forms. The recent records of *C. malherbi* could reflect a recent increase in its status, as well as increased observation.

Habitat, Composition of Flocks: Early accounts suggested that *C. malherbi* was restricted to montane scrub and forest at high elevations, but Harrison (1970) summarises many later records which show that it occurs mainly at lower elevations than this, in similar forests to those occupied by *C. a. auriceps*.

Most *C. malherbi* seen in the field have been associated with parties or flocks of *C. a. auriceps*. Haast probably saw more *C. malherbi* in the field than any other observer; he stated (*fide* Oliver 1955), that "this species and the Yellow-fronted Parakeet occur always together, but in some localities the first and in others the second is predominant". Some of the recent reports of *C. malherbi* were at sites where *C. a. auriceps* was seen at about the same time (Anon. 1949, Breen 1956, 1959).

Food: Reischek (1885) said that the food of *C. malherbi* consists of berries and seeds, and Harrison (1970) quotes a label on a specimen in the British

Museum (Natural History) stating "stomach small grubs". The food of *C. a. auriceps* consists of a wide variety of vegetable matter, ranging from fruit and seeds, to buds, leaves and the nectar and pollen of flowers. Insects have not been recorded in the diet of this form, but they are probably taken in small quantities as they are by many other platycercine parrots.

Behaviour and Nesting: Hardly anything has been recorded of the behaviour of *C. malherbi*, and very little of that of *C. a. auriceps*. Falla *et al.* (1966) state that the voice of *C. malherbi* apparently bears a close resemblance to those of *C. auriceps* and *C. novaezelandiae*, but details are not available in the literature.

Apart from a clutch of three eggs said to be of *C. malherbi* from Mt. Peel which are now in the Canterbury Museum, New Zealand, no nest of this form has been recorded in the wild. The literature appears to lack any reference to either pure pairs of *C. malherbi* or mixed pairs with *C. a. auriceps*.

C. malherbi has only once been bred in captivity. From the account of Prestwich quoted by Harrison (1970), it would appear that a pair kept by De Laurier produced a brood of four young in France in 1883. De Laurier also kept *C. auriceps* at that time, but unfortunately there is no indication of whether or not they were in separate cages from the breeding pair of *C. malherbi*, nor are there descriptions of the nestlings, all of which might have died before they were fully feathered from the meagre information given.

Discussion of the Status of C. malherbi: The information given above makes it reasonable to hypothesise that *C. malherbi* is a colour morph of *C. a. auriceps* rather than the distinct species it has been widely assumed to be.

The differences between these forms in size and bill structure that are often quoted appear to be based on the study of too few specimens, so that what appears to be a sexual size difference may have been mistaken for a species difference. Other structural differences appear to be lacking, and the colour differences can be explained in terms of small changes in carotenoid pigmentation that are probably under simple genetic control. Evidence that *C. malherbi* is only known from areas in which *C. auriceps* occurred, and that *C. malherbi* "always" occurred in flocks of *C. auriceps* when it was more common, support the colour-morph hypothesis. Insufficient is known of the behaviour, vocalisations and nesting of both forms for these kinds of information to be used in assessing their status.

Evidence that bill size and structure are similar in the two forms suggests they have similar feeding ecology. As most *C. malherbi* have apparently been seen in mixed flocks with *C. a. auriceps* in typical habitats for the latter, it is difficult to see how the ecological segregation required by the Volterra-Gause Principle could be maintained, although such segregation could occur only at times of food shortage. Congeneric species of island birds often show larger differences in bill size than continental species (Lack 1971), and with parrots generally, closely related sympatric species occurring together in the same habitats usually differ markedly in size, particularly bill size. These ecological reasons tend to suggest that the two forms are conspecific.

Observations on the occurrence of mixed pairs or of offspring differing from the parents are necessary to test the colour morph hypothesis, and these are not available. As *C. malherbi* is now rare it seems unlikely that field-workers in New Zealand will be able to fill these gaps in the knowledge available, although this is possible if a sighting of this form is followed up by intensive observation and nest-hunting. In the meantime, it is probably best to treat *C. malherbi* as a synonym of *C. a. auriceps* on the basis of the inferential evidence available.

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Three water birds of Wallacea

by C. M. N. White

Received 14th November, 1973

This note provides new information on three species of heron, stork and ibis which occur in Wallacea.

Ardea novaehollandiae

This common Australian heron has been recorded from a number of islands in southern Wallacea: Lombok, Sumbawa, Flores, Sumba, Savu, Timor,

Roma, Babar, Tenimber Islands, Kei Islands, Manggoer, Manawoka, Goram and Madu. There is also a record from Kema, north Celebes. Amadon (1942: 2–3) reviewed geographical variation in this species, finding birds from Wallacea identical with those of Australia. He did not mention that birds in Wallacea are probably non-breeding migrants from Australia.

Rensch (1931: 502) found the species common in Lombok, Sumbawa and Flores from March to July, in swamps and rice paddies near the coast and flighting to roosts in the evening. Specimens collected were not in breeding condition, and from March to early May were in wing moult. Other species of heron breed in these islands from April to July.

I have assembled the dates of 23 specimens collected in Wallacea. All fall between March and October apart from one from Timor in February. In north Australia breeding takes place from December to February. All the data from Wallacea seems to indicate that there is marked movement into a well defined part of Wallacea of migrants after breeding, and that this species must be added to the number of Australian birds which regularly winter in Wallacea.

Ciconia episcopus

This stork occurs in Wallacea in Celebes, Muna and Buton: and in Lombok, Sumbawa and Flores. They have sometimes been considered a subspecies distinct from the nominate Asiatic *C. episcopus*, under the name *C. e. neglecta*, but there has been uncertainty about this. When Finsch described *Dissoura neglecta* in 1904 he did not indicate the material upon which the name was based but merely gave the range as "Java, Sumbawa, Lombok, Celebes, Philippines". However in *Notes from the Leyden Museum*, 16 July, 1905: 152 he states that he had five specimens from Java, a similar number from Celebes and one from Sumbawa, and that the Philippine birds were "probably" the same as these.

Riley (1924: 28) recorded four specimens from Celebes which differed from birds from Burma, Thailand and the Philippines in having the distal two-thirds of the bill red with basal third black instead of having the bill dusky with only the tip and a line along the culmen red. He adopted the name *neglecta* for them, but pointed out that the exact type locality of that form was not known, and that in any case Philippine birds were like nominate *episcopus*.

Chasen (1935: 53) places *neglecta* as a synonym of *episcopus*, giving its type locality as Java, and stating in a footnote "We cannot separate *D. e. neglecta*". Stresemann (1941: 2) confirms the bill colour described by Riley in respect of two more birds from Celebes and adds that one from Lombok agrees with them.

I am very grateful to Dr. G. F. Mees for information on questions discussed here. All the birds examined by Finsch are still in the Leiden Museum except for one from Java. None of the specimens was designated as the type, so that all are syntypes. All show the extensively red bills described by Riley and Stresemann. Dr. Mees himself observed birds in west Java in January 1949, and noted at the time that their bills were dark red brown, black at base and along ridges. *D. e. neglecta* it appears can be separated from nominate *episcopus* by the colour of the bill, and birds from Java agree with those of Wallacea. The dark bill of the nominate form, apart from descriptions in the literature, is shown well in a coloured photograph in Kahl (1971: plate V). Chasen erred in giving the type locality of *neglecta* as Java, for he gives no indication that he was intending to designate a restricted type locality.

It seems possible that nominate *episcopus* is separated from *neglecta* by a wide geographical gap. For the Malay peninsula Chasen gives *episcopus* as only occurring in the north: further south he gives only Perak where *C. stormi* is

recorded, considered by Chasen as a separate species. *C. stormi* occurs in Borneo and is represented from east Sumatra (U.S. National Museum) and from North Pagi, West Sumatran Islands (Mus. Comp. Zool., Harvard). Chasen quotes Sumatra as part of the range of *C. episcopus* but this needs verification from any specimens that may exist. Mr. I. C. J. Galbraith kindly informs me that there are none in the British Museum (Nat. Hist.), Tring. Unless it can be shown that nominate *episcopus* does occur in Sumatra, *stormi* is interposed between it and *neglecta*.

Plegadis falcinellus

The status of the glossy ibis in Wallacea is obscure. It is evidently well known in Celebes where it was first collected at Makassar in 1828. There are series of adult and immature birds in the Leiden Museum, but Dr. G. F. Mees kindly informs me that there are no juveniles or any trace of evidence that it breeds. Raven collected eight adults and immatures in March 1917, at Rano Lindoe in north-central Celebes. Coomans de Ruiter (1951: 307) recorded large flights in V-formation along the coast in south-west Celebes in February with a flock of over 100 on 5 April.

If these many glossy ibises do not breed in Celebes it is difficult to imagine their origin. The species is unrecorded in Thailand or southern Vietnam: it is also almost unknown in Malaysia, with a single record from south Borneo in 1851, and a breeding population in west Java. In the Philippines it is recorded from Luzon and Mindanao and Delacour & Mayr (1946: 32) state "resident and breeds locally in Mindanao". It is difficult to believe that large numbers of birds move from either west Java or Mindanao to Celebes.

There are no records from southern Wallacea, and van Bemmel (1948) does not list it from the Moluccas. Actually Meyer & Wiglesworth (1898, ii: 803) do mention a specimen from Ternate in north Moluccas, but perhaps van Bemmel discarded this as one of the many plumage trade records bearing this as a fictitious locality. However Mrs. M. LeCroy has kindly informed me that in the American Museum of Natural History there is a female, AMNH 531287, Halmahera, October, 1884, Bruijn collectors. It seems therefore that these Moluccan records justify adding the species to the list of birds known from these islands. They are likely to be vagrants from Australia and there are few records from New Guinea, which are also suspected of being birds moving from Australia. These records from both Moluccas serve to emphasise the curious position in Celebes, even though they provide additional localities for Wallacea.

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New observations of migrants and vagrants for Aldabra, Farquhar and Astove Atolls, Indian Ocean

by C. B. Frith

Received 2nd November, 1973

Introduction

Since 1966 Aldabra Atoll (see maps in Stoddart 1971 for location) has been the subject of considerable scientific attention, brought about partly by a threat to use it as a military airfield and as a site for a major broadcasting station (Stoddart 1968). In 1971 The Royal Society of London opened a Research Station south of the Old Settlement on West Island on Aldabra, after plans for the above projects were halted as a result of economic and political pressures. I was engaged at this station as a member of the scientific staff from 9 April 1972 to 2 April 1973, and it was from there that I carried out field work for the present paper. My main concern was with the land birds and it must be stressed that notes given here on shore birds are the result of purely incidental observations.

The majority of records are from direct observation. Whenever possible, any doubtful birds were photographed for confirmation of identification or specimens were collected. Benson & Penny (1971) dealt with all the species of land birds recorded for Aldabra, and where applicable I have made comparative comments. A few records are added for Astove and Farquhar Atolls made during a day stop en route for the Seychelles from Aldabra.

The scientific nomenclature followed is that of Forbes-Watson (1972) being the most recent for the Malagasy Region. The following symbols are used after the species name:—

* new record for atoll.
† specimen obtained.
‡ photograph obtained.

Specimens and photographs are in the British Museum (Natural History), Tring.

Systematic List

Anhinga rufa, African Darter *‡

On 16 July 1972 a Seychelles labourer reported a "new bird with a very long dagger-like beak". A bird fitting this description was observed by a number of the Station staff on 29 July and identified as an African Darter. The bird was subsequently seen at least five times, the last date being 16 September 1972. All sightings took place around the Research Station and West Channels. The bird was in fine condition and at low water was seen perched on small rocks projecting a foot or two above the water surface on the open reef flat. It was only observed swimming once, in the deep water at Passe Femme where the tidal flow was considerable. Attempts to find the bird after 16 September failed. It could have been either *A. r. rufa* of Africa or *vulsini* of Madagascar.

Falco peregrinus, Peregrine Falcon *‡

Two individuals were seen, both in the vicinity of the Research Station. The first observed on 12 December 1972 was in immature plumage and the photographs obtained leave no doubt as to its identification. On 23 March 1973 a second was observed, perched in sparse *Casuarina* woodland, and a good view was had for about two minutes. This individual was in fine adult

plumage. Probably these were both the palaearctic *F. p. calidus*, recorded from Africa (White 1965: 61) and from Mauritius (Benson & Penny 1971: 515).

Falco eleonorae, Eleonora's Falcon *†

Two specimens were collected near the Old Settlement, on 1 and 17 November respectively. Both were light phase female birds, with undeveloped oocytes and fully ossified skulls. The first was in very worn plumage with no sign of moult; it had a fresh dead weight of 273 g and a wing length of 309 mm. The second was less worn with no sign of active moult but with new primaries and secondaries. The fresh dead weight was 270 g and wing length 323 mm. The gizzards of the specimens were empty save for the remains of one, unidentifiable, ant.

A live specimen was found on 1 December 1972 in very worn plumage, it was extremely thin and one eye had recently been damaged badly. This was possibly due to Pied Crows *Corvus albus* which were seen to attack other large falcons (see below). This bird was kept in captivity for eight weeks and then set free. Benson & Penny (1971: 515) give an almost certain sight record for 4 March (1968), but the above two are the first entirely certain records. Others are included below.

Falco spp.

A considerable number of falcons were seen between June 1972 and March 1973, most of them appearing in November and December. All were larger than the local kestrel, *F. newtoni*, and mostly of the appearance of *F. eleonorae*. Those of which I had poor views could possibly have been *F. eleonorae* or *F. concolor*. All observations are given below and were made near or within the Old Settlement save the first:—

16 June 1972: Cinq Cases Camp, South Island. Brief view of large, dark falcon.

31 October 1972: With little doubt a single *F. eleonorae* seen in flight.

16 November 1972: Poor views of single bird but appeared smaller than *F. eleonorae* and not as rufous on ventral side. Snatching insects in flight, once seen to hold insect in feet and feed in flight. Hovered for short periods once or twice.

21 November 1972: Three falcons soaring and gliding. Two identical to specimens of *F. eleonorae* collected and one much darker. One was being mobbed by a Pied Crow.

25 November 1972: A dark falcon flying very high and being chased by four Pied Crows.

27 November 1972: A lone falcon seen at very close quarters, perched six m high in *Casuarina* tree. I have no doubt this bird was a dark phase *F. eleonorae*.

2 December 1972: A dark falcon was seen twice during the day, probably the same individual. On one occasion it was being severely mobbed by a kestrel, *F. newtoni*, and on the other by a Pied Crow and an Aldabra Drongo *Dicrurus aldabranus*.

Clearly the above falcons, including *F. peregrinus* and *F. eleonorae*, were part of a migration movement passing over Aldabra mostly during November and December. These birds appeared to stay a very short time on the atoll, if at all, possibly as a result of mobbing by resident birds or lack of suitable food.

Pluvialis squatarola, Grey Plover

Single or small groups of up to four birds were seen near the Research

Station during every month except July, August, October and January. In addition, approximately a dozen were observed feeding on sand flats between Ile Michel and South Island on 17 June 1972, and four at Dune Jean-Louis on 5 March 1973. A single bird in both December and March was in breeding plumage, otherwise all individuals were in non-breeding dress. Probably this species can be found on Aldabra in every month, as can be inferred from the records quoted by Penny (1971: 552).

Tringa hypoleucos, Common Sandpiper

Only one individual seen, feeding on the sand bar off-shore from Research Station, 9 May 1972. This does not appear to be at all a common species on Aldabra.

Calidris minuta, Little Stint

Noted on two occasions:—3 October 1972: Twelve in a mixed flock (including Turnstone, Greater Sand Plover, Whimbrel and Crab Plover) off-shore from Research Station; 5 March 1973: Approximately 200, forming major part of a mixed flock (including Grey Plover, Greater Sand Plover and Crab Plover) on beach and reef flat at Dune Jean-Louis, South Island. Curlew Sandpipers were also present both times in small numbers for comparison. The records in Penny (1971: 553) do not indicate that the Little Stint can be normally numerous on Aldabra.

Dromas ardeola, Crab Plover

Seen throughout the year, in flocks usually consisting of 20 to 50 individuals. Conspicuously larger flocks, approximate numbers per flock, were as follows:—

17 May 1972: 1,000 birds on Iles Moustique.
25 October 1972: 450 at Dune Jean-Louis.
27 October 1972: 250 flew past Research Station from south to north.
5 February 1973: 450 flew past Research Station from south to north.
7 February 1973: 400 flew past Research Station from south to north.

The larger flocks observed flying northward are worthy of note. It is true some flocks were seen flying south past the Station but these were far smaller in number and loosely organised compared with the larger ones, and were probably feeding birds. The northward bound flocks, however, were in tight formation, flying low and fast in a direct line. They were not seen to alight or break up whilst within sight of the Station, after which point they would shortly have reached the north-west tip of the atoll and the open sea. A projected line of their flight path would lead directly to the coast of Somalia, where the species is known to breed from March to October (Archer & Godman 1937: 447). The October flock seen flying north would, however, arrive at the end of the breeding season. In any case there seems to be little doubt that Aldabra plays an important role in the movements of this species.

Streptopelia turtur, Turtle Dove *†

A single bird appeared on 4 December 1972, and seen feeding on rice with a number of Madagascar Turtle Doves *S. picturata* by a chicken pen. D. Goodwin of the British Museum (Nat. Hist.) examined the specimen and provided the following notes:—"I think this bird is of the nominate race, *S. t. turtur*. It agrees well in size with samples of this form and the differences in colouration are, I think, due to wear and weathering. Although it is darker than specimens (in the British Museum collections) of *S. t. turtur* (beacuse of wear, I think), one would have expected it to be less dark were it referable to the paler (and smaller) *S. t. arenicola*, the larger, reddish population probably

breeding in the Yarkland regions (Goodwin 1970) or the desert forms *S. t. hoggara* or *S. t. isabellina*. Specimens of *S. t. turtur* in the collection have all been collected either in their breeding quarters or on migration, so there are no December specimens for comparison. It would be of great interest to know where this bird would have wintered. It would seem unlikely that it was actually on migration in December".

The specimen is a male and had undeveloped gonads and ossified skull. The fresh dead weight was 105 g and wing length 176 mm.

Cuculus canorus, Grey Cuckoo

A lone bird was sighted in the palm grove by the Research Station on 2 November 1972: this was undoubtedly the individual seen on five subsequent occasions, the last being 16 November 1972. Four times the bird was seen in a large *Tournefortia argentea* bush at the crest of a small beach. A 'salt and pepper' moth, *Utetheisa lactea*, was extremely abundant on this bush and this insect probably formed a large part of the bird's diet on Aldabra. The Aldabra Drongo *Dicrurus aldabranus* was seen to mob the cuckoo severely.

Like the cuckoo recorded for Aldabra by Diamond and Penny (in Benson & Penny 1971: 516) this bird appeared as large as any to be seen in England, which would appear to rule out the possibility of it being the smaller *C. poliocephalus* which Benson & Penny consider less likely to occur.

Apus apus, Common Swift

Benson has asked me to include comment on the identity of the specimen collected by Abbott on 1 December 1892, recorded by Benson (1967: 91) as *A. a. apus*. R. K. Brooke (pers. comm. to Benson) re-examined it during a visit to the Smithsonian Institution in 1968, and reports as follows:—"The specimen was found to be a juvenile *A. a. pekinensis*. It agreed completely with juveniles from Kashmir in lacking the pale patch above the bill which juveniles of nominate *apus* have. This difference (in juveniles) is diagnostic between the two subspecies. The fact that it was a juvenile increases the chance that the Aldabra bird was lost. No trace of moult in the primaries was found in this specimen. However, the specimen reported on by Benson & Penny (1971: 516), in the British Museum, which has been re-examined by Benson and P. R. Colston, is still considered to belong to the nominate form.

Telacanthura ussheri, Mottled Spinetail*

Swifts were observed on three occasions at the Old Settlement. They were about the size of the Common Swift *Apus apus*, but with distinct white rumps and square tails. Two birds seen on both 7 and 8 December 1972 (probably the same individuals) were observed to have distinct white vents. A single individual was seen on 3 January 1973.

I suspected that these birds might be *Telacanthura ussheri*. The question was referred by Benson to R. K. Brooke, who has commented that the above description fits only *T. u. stictilaema* of eastern Africa or *benguellensis* of south-eastern Africa, the former being on geographical grounds the more likely. He adds that this species is not known to have more than local movements, and large scale movements are not to be expected.

Merops superciliosus, Madagascar or Blue-cheeked Bee-eater

One was seen, perched in the top of a *Casuarina* tree by the Research Station, 15 December 1972. It was not sufficiently closely seen to decide whether it was a Madagascar Bee-eater *M. s. superciliosus* or Blue-cheeked Bee-eater *M. s. persicus*. Benson & Penny (1971: 517) give an unequivocal record of the latter.

Eurystomus glaucurus, Broad-billed Roller †

An example was first noted, and collected, at the Old Settlement on 31 October 1972. It proved to be a male, in very fresh plumage. The skull was ossified, fresh dead weight 119 g, and wing length 210 mm. The testes were undeveloped, measuring 5 × 3 mm. There were four large insects in the gizzard; one of both Homoptera and Hymenoptera, and two Scarabaeidae.

The wing length clearly indicates that this specimen belongs to the Madagascar breeding form, *E. g. glaucurus*. Benson informs me that two males and a female which he and A. Williams collected in Madagascar in November 1972/January 1973 weighed respectively 136, 166, 149 g. The Aldabra specimen was evidently emaciated, probably through lack of sufficient suitable food.

Nine sightings of this species followed the above one, involving at least six individuals, around the Old Settlement and the Research Station. All were during November and December 1972, the last being on 19 December. The kestrel *Falco newtoni* was seen to mob this species.

All these records are best interpreted as 'fall-outs' on return migration to Madagascar. Earlier records are discussed by Benson & Penny (1971: 517), and for another recent one see Benson (1972).

Hirundo rustica, Swallow

Three appeared on 19 March 1973 and were about the Research Station for a couple of days, appearing toward evening to hunt over the solar stills. Previous records of this species on Aldabra are all between 14 March and 10 April (Benson & Penny 1971: 520).

Motacilla alba, White Wagtail *

D. Bourn reported a single individual at Dune Jean-Louis, South Island, on 7 March 1973. The bird was observed for a considerable time, and Bourn made extensive notes and provided me with excellent field sketches. He made particular note of a grey back and the white on the sides of the head extending back to meet the grey mantle, and is familiar with the species in Europe.

Anthus trivialis, Tree Pipit * †

This species was first seen near the Research Station on 18 November 1972, and an individual, no doubt the same one, was collected at the same site two days later. The specimen is in slightly worn plumage, had a fresh dead weight of 18·0 g and a wing length of 83 mm. It proved to be a male with gonads completely undeveloped and skull not quite fully ossified.

Three other pipits were seen, all close to the Research Station in *Casuarina* woodland, on 27 November, 17 December 1972 and 13 March 1973. Views of the first two were poor but they looked like *A. trivialis*, and the third was virtually certainly that species.

The specimen confirms that the species does visit Aldabra, and suggests that the bird seen by Grubb and Hutson (Benson & Penny 1971: 518) at Cinq Cases in January 1968 was this species.

Oenanthe oenanthe, Wheatear

A grey-backed male was observed about the Research Station from 2 to 4 January 1973. Mrs. Loris Topliffe informed me of another grey-backed bird seen inland from the Station on 17 February 1973. Benson & Penny (1971: 519) recorded this species on Aldabra for the first time, and thought it may regularly occur there in extremely small numbers. My observations tend to support this contention. For another recent record, see Benson (1972).

Phylloscopus trochilus?, Willow Warbler? *

A bird believed to be a Willow Warbler *Phylloscopus trochilus* was observed

for about five minutes on one of the small islets inside Passe Femme on 10 April 1972. Very good views were obtained as the bird fed on insects from the foliage of mangrove trees, *Rhizophora mucronata*. It was not collected but the possibility of it being some other *Phylloscopus* sp. on geographical grounds is most unlikely. Furthermore, the Willow Warbler has recently been recorded for the Amirante Bank group (Benson 1972).

Phylloscopus sibilatrix, Wood Warbler *†

A single bird was collected at the Old Settlement on 12 December 1972, whilst feeding on insects from foliage of a *Casuarina* tree. The fresh dead weight was 8·6 g, wing length 73 mm. It proved to be a male, in fresh plumage, with totally undeveloped gonads and a fully ossified skull. Insect groups represented in the gizzard were, in order of predominance: Hymenoptera, Dictyoptera, Diptera. This species is an addition to the list by Forbes-Watson (1972), and Moreau (1972: 102) gives very few African records from south of the equator.

Muscicapa striata, Spotted Flycatcher †

A specimen was collected just north of the Research Station on 23 November 1972. It proved to be a male with undeveloped gonads and skull ossification incomplete. The fresh dead weight was 14·6 g and wing length 88 mm. Contents of the gizzard included insects of the following groups: Odonata; Coleoptera, Curculionidae; Hymenoptera, Vespoidae; Hemiptera. Another individual was seen just south of the Old Settlement, 1 December 1972.

Benson & Penny (1971: 518) give a number of occurrences between 11 and 28 March, which they considered representative of a northward passage. The above two evidently are referable to a southward one. A specimen recorded by Benson & Penny was identified as *M. s. striata*, as is also mine.

Oriolus oriolus, Golden Oriole

One bird, in female plumage, was observed foraging on *Casuarina* foliage, 19 November 1972, near the Research Station. The only other record of this species in the Malagasy Region is that of a single bird collected in March on Aldabra (Benson & Penny 1971: 521). The earlier record was considered to be of a lost migrant on northward passage. This November individual presumably represents a lost southward bound migrant.

Astove Atoll

Eight hours were spent on Astove during 3 April 1973, bird watching in the coconut palm grove and mixed scrub near the settlement area. Except for the additional information given below the avifauna was the same as recorded by Benson (1970).

Phylloscopus trochilus?, Willow Warbler? *

A bird thought to be a Willow Warbler was observed taking insects from the foliage of a very broad leaved fig-like tree in the centre of the settlement area. It was in fine plumage and quiet, and very good views were had. This is the first record of a true land bird migrant for Astove Atoll. Considering also the records of *Phylloscopus* spp. already given above, it can be suggested that warblers are not so very rare on islands in the Malagasy Region, but ornithologists are.

Introduced species

Domestic pigeons *Columba livia* have recently been introduced by the people resident on the atoll. This is most regrettable as the introduced birds

may well preclude the possibility of future colonization by a wild pigeon species. The present population is estimated at approximately 60 birds. Many of these can be seen about the settlement (where they are fed), but several were flushed from the open mixed scrub a considerable distance from human influence.

Domestic chickens are feral throughout the atoll. Domestic and Muscovy Ducks *Anas platyrhynchos* and *Cairina moschata* are to be found in and about the settlement buildings.

Farquhar Atoll

During the eleven hours spent on Farquhar on 6 April 1973 a walk from the settlement area to the far end of North Island and back was made. Habitat inland was exclusively old cultivated palm grove with shrubs and grasses beneath. The following records supplement the information in Stoddart & Poore (1970: 19–21).

Larus fuscus, Lesser Black-backed Gull *

A single individual was seen as soon as the ship anchored off the reef and observed until the time of departure. The fact that it did not follow the vessel into the area was confirmed by Mr. Sedgwick, manager and postmaster of Farquhar, who told me that the bird had been about for over a week. This is the first record of the species on Farquhar, the second island on which it has observed in the Malagasy Region, Aldabra being the first (Dawson 1966: 8).

Introduced species

The Barred Ground-dove *Geopelia striata* was extremely numerous throughout North Island, parties of five to ten birds being flushed frequently. Equally numerous was the Madagascar Fody *Foudia madagascariensis*, many nests of which were in use.

Other species

Approximately 30 Turnstones *Arenaria interpres* were noted during the course of the day.

Acknowledgements

Firstly I thank all my friends and colleagues who were on Aldabra with me for their enthusuasm in pointing out 'odd' birds. I also thank Antonio Constance for his assistance in the field; his remarkable eye for wildlife and accurate descriptions were of great value. For hospitality I am grateful to Mrs. R. M. Veevers-Carter on Astove, and Mr. Sedgwick on Farquhar. Mr. B. H. Cogan kindly identified the insects found in gizzards.

The general guidance of Mr. J. F. Peake, Dr. D. W. Snow and Dr. D. R. Stoddart has been of great benefit. I am also grateful to Mr. C. W. Benson, Dr. W. R. P. Bourne, Mr. R. K. Brooke, Mr. P. R. Colston and Mr. D. Goodwin for advice and assistance in the course of the preparation of this paper. Lastly I must express my appreciation to the Royal Society of London and those persons on the Society's staff concerned with Aldabra for the opportunity to visit the atoll and complete my researches on my return to the United Kingdom.

Summary

Records of migrant and vagrant birds were made on Aldabra during the period 9 April 1972 to 2 April 1973. Observations on Astove and Farquhar were made during a day stop at each, en route for the Seychelles from Aldabra. Nine species are recorded as new for Aldabra, and one each for Farquhar and Astove. Of the species of land birds recorded on Aldabra, all arrived

as odd individuals or in very small flocks with the exception of the falcons which appear to move over Aldabra in a steady migration, mostly in November/December. Large flocks of Crab Plovers *Dromas ardeola*, observed moving north from Aldabra, appear to represent a migration to breeding grounds on the coast of Somalia. There appear to have been some recent introductions on Astove.

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Turtle Dove *Streptopelia turtur* in South West Africa

by J. M. Winterbottom

Received 7th January, 1974

Some years ago, Mr. A. J. Horak, then living on the Okavango River, caught a strange dove, which he placed in his aviary. Some years later, when he had moved to Oranjemund, at the mouth of the Orange River, he caught another. They proved to be female and male respectively and Mr. Horak succeeded in breeding from them, after the death of the original female, from the offspring. He has now about eight of these birds, which he identified as the palearctic Turtle Dove *Streptopelia turtur*.

I saw these birds on 28 September 1973, and there is no doubt about the correctness of the identification. The problem is, how did they get to South West Africa? Vaurie (1965, *The birds of the palearctic fauna. Non-passeriformes*) gives the winter quarters as "Africa south to Senegal, Gambia, the Sudan and Abyssinia". The only alternative to their being migrants which have overshot their mark is that they were escapes from captivity. While this last is just conceivable for the Oranjemund example, I find it quite incredible that anybody would be keeping Turtle Doves on the Okavango without Mr. Horak's knowledge; and we know that other palearctic migrants do overshoot their normal wintering range—witness Merlins *Falco columbarius* in Natal and European Swallows *Hirundo rustica* on Marion Island.

[The above note was shown to D. Goodwin, who suggests that some *Streptopelia turtur* might go further south than previous observations have suggested. For a record from Aldabra, see p. 14 above.—Ed.].

The significance of records of the Common Sandpiper breeding in East Africa

by C. W. Benson & M. P. Stuart Irwin

Received 18th November, 1973

As a family the Scolopacidae are virtually confined in their breeding range to the Palaearctic and Nearctic regions and are usually long-distance migrants. There are however some major exceptions to this. Members of the Scolopacinae, especially the genus *Gallinago*, for the most part frequenting swampy grassland, have managed successfully to colonise the Old and New World tropics. Meyer de Schauensee (1966) lists five species of the genus as being endemic to the Neotropical region, where a geographically representative population of the almost cosmopolitan Common Snipe *G. gallinago* also occurs. In Africa the Ethiopian Snipe *G. nigripennis*, often regarded as conspecific with *gallinago* as by Voous (1960), is also widespread on that continent; as is the Madagascar *G. macrodactyla* in the east of that island. In south-east Asia and Indonesia the Pintail Snipe *G. stenura* breeds as far eastwards as the island of Borneo, and the East Indian Woodcock *Scolopax saturata* from Sumatra to New Guinea. Two members of the relict tribe Prosoboniini (classification of Zusi & Jehl 1970: 760–780), one of which is now extinct, are confined to the Society Islands and the islands of the Tuamotu group in the tropical Pacific Ocean.

Any other records of scolopacids breeding outside of the Holarctic region as a whole are therefore of particular zoogeographical interest. Indeed the only such evidence are records of the Common Sandpiper *Tringa hypoleucos* in East Africa. Benson *et al.* (1970: 14), however, saw no reason for accepting any African breeding record of this species. Subsequently Cunningham van Someren (1973) claims that such breeding records are authentic. From the text of van Someren & van Someren (1911) it would appear that the first one is from the shore of Lake Victoria, in Uganda, and that eggs were being incubated in either August or September. The accompanying photograph of an incubating bird can surely only be of a Common Sandpiper. It has been critically inspected by Drs. D. W. Snow and P. J. K. Burton as well as by Benson himself. There is also a record quoted by Moreau (1966: 124) of young chicks just fledged seen by Meinertzhagen on the Kajiado River, in Kenya, in June; and Cunningham van Someren quotes further data from van Someren (1936: 60–61).

In view of the evidence quoted in the preceding paragraph it is admittedly going too far to reject these records. Cunningham van Someren indicates that Benson *et al.* are following Chapin (1939: 97) and Moreau (*loc. cit.*) in rejecting the evidence. Neither Chapin nor Moreau mentions the data provided by van Someren (1936: *loc. cit.*), partly at least a repetition of earlier data. In fact they did not reject the Lake Victoria and Kajiado records entirely out of hand. Nevertheless Chapin was sceptical, and Moreau concluded that at most breeding in East Africa is very rare.

Moreau's conclusion is surely correct, although the Lake Victoria record seems irrefutable. We do not know of any further evidence of breeding from anywhere in the Ethiopian region as a whole. The Republic of South Africa or Rhodesia would seem as likely an area for breeding as any, and in general is ornithologically the best known part of the Ethiopian region. We therefore wish particularly to stress that, whatever might have been the situation under a different climatic regime in the past or might be in the future, in the present

epoch the Common Sandpiper cannot be regarded as in any sense a regular member of the Ethiopian breeding avifauna. It would appear to us that the case of the Common Sandpiper is in part analogous to that of the White Stork *Ciconia ciconia* and House Martin *Delichon urbica*, recorded as breeding occasionally in South Africa, as discussed by Moreau (1966: 123), only in this instance it is the sole member of the Tringinae to breed anywhere within the tropics.

Doubtless Cunningham van Someren is correct in stating that Common Sandpipers are present throughout the year in East Africa. We can corroborate from our own experience in Rhodesia and Zambia, merely as one further example, that this is also the case further south. But a similar situation exists for some other scolopacine waders, e.g. the Greenshank *Tringa nebularia*, and is not evidence of local breeding. Thus Dowsett (in Benson *et al.* 1970: 14) counted more than 500 Greenshanks in a stretch of 300 miles of the Luangwa River walked in July and August 1966 and 1967. Actually Dowsett (pers. comm.) finds that the Greenshank is the commonest of the scolopacines which overwinter in Zambia, the Common Sandpiper the least so, and so the least likely to breed; this presumably applying in other parts of Africa too.

Finally, we cannot but remark, that despite the amount of ornithological investigation in East Africa in recent decades, no further evidence in support of these earlier observations has come to light.

We are grateful to R. K. Brooke and R. J. Dowsett for their comments on a draft of this note.

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The predators of the Jackass Penguin *Spheniscus demersus*

by J. Cooper

Received 19th September, 1973

INTRODUCTION

Temperate zone penguins appear to have different predators and may experience a lower level of predation than sub-Antarctic and Antarctic species (Stonehouse 1967). Important predators in high latitudes are the Leopard Seal *Hydrurga lepontonyx*, Great Skua *Catharacta maccormicki*, and Giant Petrel *Macronectes giganteus* (Stonehouse 1960, 1967; Swales 1965; Young 1963, 1970). Virtually nothing is known of the predators or the level of predation of temperate species.

Casual unquantified observations were made of predation on the temperate

Jackass Penguin *Spheniscus demersus*, and on its eggs and chicks during the period February 1971 to December 1972 on Dassen Island (33°25′S, 18°06′E) off the west coast of South Africa. Predation of the Jackass Penguin is considered in three sections; predation of eggs, chicks and juveniles and adults.

PREDATION OF EGGS

The only observed predator of eggs was the Dominican Gull *Larus dominicanus*. The gull was never observed to take eggs from incubating penguins as does the Great Skua (Young 1970). However the possibility exists that gulls may work in pairs to entice penguins from their nests (Headman, Dassen Island, pers. comm.). Gulls were only seen to take eggs from deserted surface nests and were therefore acting more as scavengers than as predators. Human disturbance to breeding penguins permits gulls to obtain more eggs than they would under undisturbed conditions. Deserted eggs in burrows were left untouched, since they were invisible to gulls patrolling overhead. The increase in the penguin's surface nesting habit due to guano removal and paving of the breeding areas on some islands has increased the gulls' chances of obtaining eggs. Berry *et al.* (in press) found that gull numbers increased on Halifax Island, South West Africa, during guano collection and that many eggs were taken by gulls as the penguins deserted because of human disturbance. Guano removal has apparently caused an increase in surface nesting on Halifax Island.

While skuas and Giant Petrels occur in the seas around Dassen they are not seen ashore, and therefore do not take eggs (or chicks) as they do in high latitudes.

Man has been an important predator of Jackass Penguins. From 1917 to 1931 an average of 460,000 eggs was officially collected annually on Dassen Island (Cott 1953). Collecting was halted in 1968 and poaching is now at a low level, but still causes some disturbance.

PREDATION OF CHICKS

Penguin chicks are predated by Dominican Gulls, Sacred Ibis *Threskiornis aethiopicus* and possibly by feral domestic cats *Felis lybica*. Gulls took small unattended chicks (up to one week old) from surface nests. Human disturbance causing temporary desertion increases chick loss since small chicks are normally brooded continuously. Larger chicks were only attacked if very weak. The Sacred Ibis was only seen to attack weak unattended chicks, mostly comatose. This bird mainly scavenges corpses, and is only a casual predator.

Feral cats occur on Dassen Island feeding mainly on the feral rabbit *Oryctolagus cuniculus*. It is possible that they sometimes take penguin chicks though this was never proved by stomach content examination. Small chicks often disappeared from deserted burrows inaccessible to gulls and could have been taken by cats. One penguin chick (*ca.* 1,500 g) was found showing signs of having been partially eaten by a cat.

Chicks have been collected for food and for fish bait in the past, but man is no longer a predator. The extinction of the penguin colony on Robben Island in Table Bay (South Africa) was probably partially due to the collection of chicks in large numbers.

PREDATION OF JUVENILES AND ADULTS

The Cape Fur Seal *Arctocephalus pusillus* was the only predator seen to take fledged penguins. A single animal, thought to be a female by its size, was often seen feeding on penguins in House Bay, Dassen Island. A total of 57 penguin corpses was washed up, but many more must have been carried

away by prevailing winds and currents. On one day a total of 25 was washed up. The seal's technique was invariably to decapitate the bird with one bite and then to disembowel the carcass by shaking, removing the belly skin and eating the viscera and stomach contents. The breast muscle and the rest of the corpse were left untouched. The Cape Fur Seal is not thought to be a common predator of the Jackass Penguin; Rand (1959) mentions only one bull seal which was feeding on penguins off Dyer Island near Cape Agulhas in 1937. A similar case occurred at Halifax Island in 1957. Bourne & Dixon (1973) quote an observation made at sea near Dassen Island where "a seal was seen to catch a penguin, shake it about and toss it in the air". This was most probably a Cape Fur Seal. The habit seems to be confined to individuals which only appear interested in the stomach contents of penguins. The seal was not always present and it is considered unlikely that penguins formed its sole diet as no drastic decline in penguin numbers was noticed at the landing stages in House Bay.

On other islands seals and penguins apparently live together in harmony. I have observed seals close inshore at Dyer Island and Possession Island, South West Africa, but they were not seen to catch penguins. Predation of penguins by Fur Seals is not considered regular by Stonehouse (1967). However, the New Zealand Fur Seal *A. forsteri* takes Rockhopper Penguins *Eudyptes crestatus* in quantity off Campbell Island (Bailey & Sorensen 1962), and apparently on Macquarie Island as well (Warham 1963). Boswall (1972) quotes observations by Ian Strange of the South American Sea Lion *Otaria byronia* killing the Magellanic Penguin *Spheniscus magellanicus* in the Falkland Islands. Sea lions do not occur in South African waters. The Leopard Seal is very rare in South African waters (P. Best pers. comm.) and thus cannot be an important predator of the resident Jackass Penguin.

An old record of a Bryde's Whale *Balaenoptera edeni* (=*brydei*), with 15 Jackass Penguins in its gut (Olsen 1913), is considered to be unusual (P. Best pers. comm.), as this animal has a narrow gullet and feeds on small fish and euphausids. Bird remains were absent from 119 Bryde's Whale stomachs examined from South African waters (Best 1967).

Killer Whales *Orcinus orca* have been recorded taking penguins in high latitudes and do occur in South African waters. Penguins have not been found in ten stomachs examined by P. Best although one contained an albatrosse. The Killer Whale is probably only a minor predator of Jackass Penguins.

Giant Petrels have been seen scavenging on Jackass Penguins killed by Cape Fur Seals but have not been seen to attack live birds; at Gough Island this petrel kills freshly moulted Rockhopper Penguins as they enter the water (Swales 1965).

Likely, but unproven predators of penguins are sharks. Penguins were often seen on Dassen Island with missing feet or truncated flippers. These injuries could have been caused by seals or sharks. Hagen (1952) mentions the Blue Shark *Glyphis glaucus* as a possible predator of Rockhopper Penguins at Gough Island.

Historically man has been an important predator of juvenile and adult penguins. In the seventeenth and eighteenth centuries many birds were collected for food on Robben Island. They have been used as fish bait, and are occasionally drowned in fishing nets. At present man is no more than a casual predator of Jackass Penguins.

SUMMARY

The Jackass Penguin is preyed upon by several animals, but none of these appears to be an important predator. Predation of eggs by Dominican Gulls

is related to the level of human disturbance and the increase in surface nesting. The Dominican Gull and Sacred Ibis take small unattended or weak chicks. Feral domestic cats may also take chicks, but proof is lacking. Juvenile and adult birds are preyed on by individual Cape Fur Seals but this is a rare occurrence. The Cape Fur Seal was only observed to eat viscera and stomach contents. Predation by sharks is an unknown factor, and Killer Whales, Leopard Seals, Skuas and Giant Petrels are not thought to be important predators in South African waters. Man has been an important predator of penguins in the past, taking eggs, chicks and fledged birds, causing the extinction of at least one island breeding colony. Predation by man is no longer important.

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The Boran Cisticola in Ethiopia

by J. S. Ash

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Following Benson's (1946) account of unidentified Cisticolas in southern Ethiopia, North & McChesney (1964) collected and recorded what were apparently similar birds in Kenya. The latter authors dubbed them "Boran Cisticolas".

Although Boran Cisticolas are morphologically inseparable from the

Rattling Cisticola *C. chiniana* (Hall & Moreau 1970) their behaviour, song, and habitat preferences are dissimilar; clearly, two species are involved.

At the risk of possibly confusing the problem further, it seems worthwhile recording some observations on a *Cisticola* which seems to be fairly widespread in southern Ethiopia. I have used the same name Boran Cisticola for these birds, although I cannot be certain that they are the same as those described by the above authors. This seems likely, for they are inseparable in the field from *chiniana* on plumage characters, but differ in other respects. Their most noticeable feature is the loud song, quite unlike the rattling song of *chiniana*, and to my ear strongly reminiscent of the palearctic Chaffinch *Fringilla coelebs*.

Boran Cisticolas have been found most commonly in the Kebre Mengist and Neghelli areas, in Borana, part of Sidamo (Benson recorded them at Neghelli). In April 1971 they were fairly common between these two places at 75 km by road (5°31′N, 39°29′E) east of Kebre Mengist, and here a bird was incubating four eggs on 17 April in a ball-shaped nest *ca* 15 cm above the ground in roadside weeds; they were again common at 40 km to the east (05°14′N, 39°57′E) and at 54 km to the south (05°00′N, 39°29′E) of Neghelli. In April 1973 they were common at various points between these localities and at Neghelli itself. On 23 April 1971 by the Genale River (05°32′N, 39°42′E), north of Neghelli, a bird left a nest at 0700 which contained a warm, and probably new-laid egg; there was still one egg at dusk, but two at 0800 the following morning. This nest was similar to the other, and was *ca* 23 cm above the ground in low herbaceous growth. Benson recorded a nest with four eggs on 19 June. Since April 1971, further birds with the same characters of plumage and song have been observed, and these records suggest that the species is widespread in southern Ethiopia: Gibe gorge (08°08′N, 37°29′E), Kaffa Province: fairly common on 30 May and 19/20 June 1971; Dire Dawa, Harar Province: one singing at 10 km to south (09°34′N, 41°52′E) on 5 September 1971; Harar, Harar Province: single birds at 26 km to east (09°14′N, 42°18′E) and 46 km to east (09°13′N, 42°28′E); Metahara, Shoa Province: single birds at 62 km and 66 km to west (08°41′N, 39°30′E); Langano (7°34′N, 38°51′E), Shoa Province: one on 3 October 1971, and 6+ singing on 13 February 1972 and 6/7 May 1972, and subsequently over a fairly wide area in 1972 and 1973, singing in March, May and June; Arba Minch (6°02′N, 37°36′E), one on 14/15 April 1972; Yavello, at 15 km to the north-east (5°00′N, 38°12′E), one on 2 June 1972; Ghinir (7°8′N, 40°43′E), common on 9 April 1973.

Whereas there are only a few records of the Boran Cisticola in the Rift Valley, most of my records of *chiniana* are confined to that region at many localities from Bahadu (10°05′N, 40°37′E) in the north to Lake Chamo (5°48′N, 37°31′E) in the south. Outside the Rift Valley *chiniana* has only been found at Yavello and Neghelli. Nests with eggs have been found in April, July and September. There are also records in the south at Bulcha (6°27′N, 38°11′E), near Lake Margherita (=Abbaya), but these birds have not been heard singing, so it is uncertain if they are *chiniana* or the Boran, although I have specimens.

Boran Cisticolas tend to be found in thicker and lusher cover than *chiniana*, and they have only been found within sight or sound of each other in three areas. At Arba Minch in April 1972, one bird was singing in a thick cover of bushes on top of the escarpment, whilst on the slopes, 50–100 m below, *chiniana* was common. At one Langano site, Boran Cisticolas occur in the thick cover at the base of the escarpment on the lake-shore, separated by

only about a kilometre from the nearest *chiniana* in the more open acacia bush, but at another site they occur together. At Yavello, a singing Boran was in an area where *chiniana* was common. The Boran has been observed at an altitude range of 879–1573 m, and *chiniana* at 600–2000 m.

To summarise my observations on the range of the two species: *C. chiniana* extends throughout most of the Rift Valley, only occurring beyond this area locally in Borana. Urban & Brown (1971) state that it occurs north to Eritrea, where it is rare. The Boran overlaps the range of *chiniana* broadly in the Rift Valley, except north of 8°30'N, with extensions to the north-east, east and west. Further observations, especially in the south-west, may alter this picture. However, on extensive journeys further east in Haud, Ogaden, southern Sidamo and Bale, there has been no sign of either species.

Morphological differences between the two species are described by Erard in the immediately following paper.

Acknowledgements: I am grateful to C. Erard, K. D. Smith and Dr. C. K. Wallace, for commenting on this paper. Part of these observations were made during the course of research supported by the Office of Naval Research Task Order No. N00014–67–A–0399–0009 and Bureau of Medicine and Surgery Work Unit MR 041.09.01 – 0014D6HJ. The work was undertaken under the auspices of Dr. George E. Watson of the Smithsonian Institution and Drs. J. R. Schmidt and C. K. Wallace of U.S. Naval Medical Research Unit No. 3, Research Detachment, Addis Ababa, Ethiopia.

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The problem of the Boran Cisticola

by C. Erard

Received 20th August, 1973

INTRODUCTION

The existence in Ethiopia of two sibling species of cisticolas was first brought to light by Benson (1946: 199–203). This author collected in Sidamo *Cisticola chiniana* (Smith) and another species morphologically similar but different in voice and habitat. Later, North & McChesney (1964) collected and recorded them also, in Kenya, at Marsabit (2°20'N, 37°50'E) and Nanyuki (0°01'N, 37°05'E), and gave the vernacular name "Boran Cisticola" to the second species.

In 1968, during one of the expeditions to Ethiopia organised by the Laboratoire de Zoologie (Mammifères et Oiseaux) du Muséum National d'Histoire Naturelle de Paris, J. Prévost and the author in their turn found two cisticolas in Sidamo which, although morphologically similar, differed in voice, behaviour and biotope. Still not knowing well the cisticolas of Ethiopia and not being conversant at the time with the problem posed by Benson's observations, they thought that there must be obvious differences which would be apparent when skins were compared. Also, detailed notes

on the voice of each specimen collected were not made systematically. This was an error. The material collected in 1968 remained unidentified.

In 1971, during another expedition, Prévost and the author, accompanied by N. Follet, took up the problem again. For each specimen collected a record was made as to its type of voice, while at the same time a series of specimens of the two species was collected which brought to light morphological differences. In the discussion which follows, this sibling of the Rattling Cisticola *C. chiniana* will be referred to as the Boran Cisticola, which can be regarded as of established usage.

VOICE

This is the best criterion for distinguishing the two species, and it is doubtless this which plays the most important part in their isolation from one another. Lynes (1930: 247) has described well the voice of *chiniana*. The alarm cry can be rendered as "ptit" or "tchit", sharp and repeated, sometimes "tititi" as in a tit *Parus* sp. The song consists of two or three notes, detached and a little drawn out (most frequently two notes, somewhat grating, reminiscent of a Whitethroat *Sylvia communis* in tone), followed by a short trill. In the field, it was recorded as "piu-piu-trrtrrtrr" (the most frequent), "tu-tu-tititi", "tu-tu-titititi", "prr-prr-vouivouivouivoui". The same song as in Ethiopia was heard in December 1971 in Kenya and Tanzania.

The alarm cry of the Boran Cisticola is a nasal "tséé-tséé", sometimes repeated in a series of as many as ten such notes. It is usually the male which makes this call, facing the intruder, on a conspicuous perch, a special posture being adopted. He stands erect, making himself as tall as possible, the wings being beaten spasmodically and vigorously, and brought to the vertical at each beat, while at the same time balance is kept by violent vertical jerks of the tail. This has the effect of dispersing a family group. A playback on the magnetophone of these calls causes the bird to emit more in a louder tone; if this is continued, it becomes more and more excited, sings and attacks the magnetophone. This would suggest that the calls do not only serve to warn the partner and their offspring but also have a combative value in territory maintenance. In fact, when a male penetrates the territory of another, he is evicted with cries similar to his own. We have also heard, rarely, from excited birds a dry "téc-téc", sometimes followed by a rapid "tsuisuisui".

The song of the Boran Cisticola recalls, to a European ear (see also Ash 1974), certain stanzas of the Chaffinch *Fringilla coelebs*, especially at the end of winter when they are not yet complete. This song is a rapid, very loud "rolling" which one could even qualify as explosive (see also Benson *loc. cit.*). The phonetic transcriptions of the song in nature are remarkably constant: "til-lilulululu" or "tchit-tilulululu" or "tip-tilululu", the individual variation being relatively slight and depending especially on the length of the stanza.

Figure 1 shows the sonagrams of the songs of the two species. It appears that the birds recorded by North in Kenya are indeed Boran, not Rattling Cisticolas. A comparison, kindly carried out and commented on by Dr. C. Chappuis, shows that:—

(1) In true *chiniana* the song is composed of a *regular* initial series of vibrant notes, *long* and of a *complex* tonal structure. This is followed by one or two series of short but identical notes of a rapid rhythm.

(2) In the Boran Cisticola according to North and in Ethiopia, the song is composed of an *irregular* initial series of notes modulated in frequency, *short* and of a *simple* tonal structure. This is followed by a series of notes of varying frequency and higher intensity.

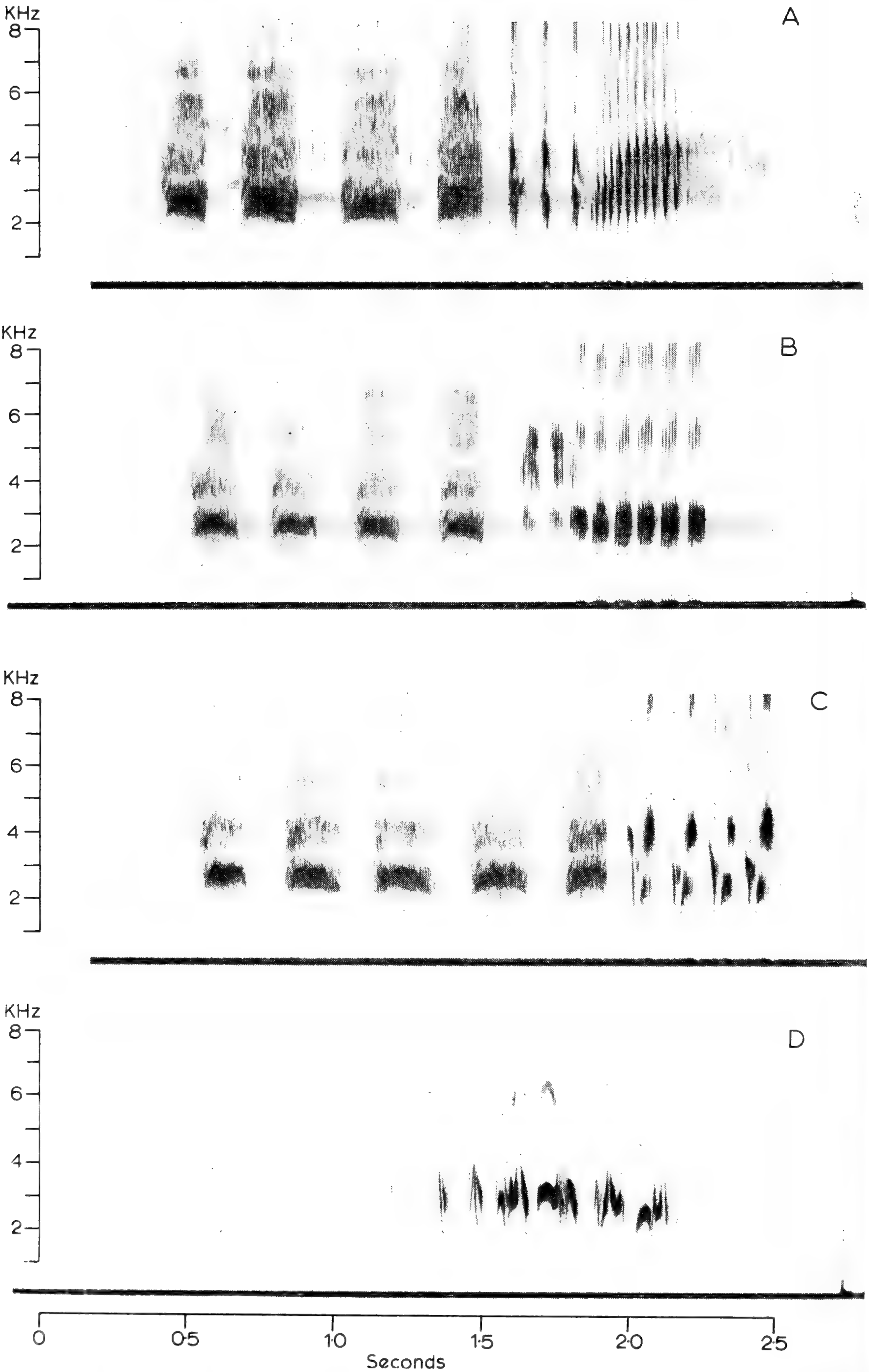


Figure 1. Wide-band sonagrams showing the following songs:—A, B and C, different forms of the song of the Rattling Cisticola; D. Boran Cisticola (by North).

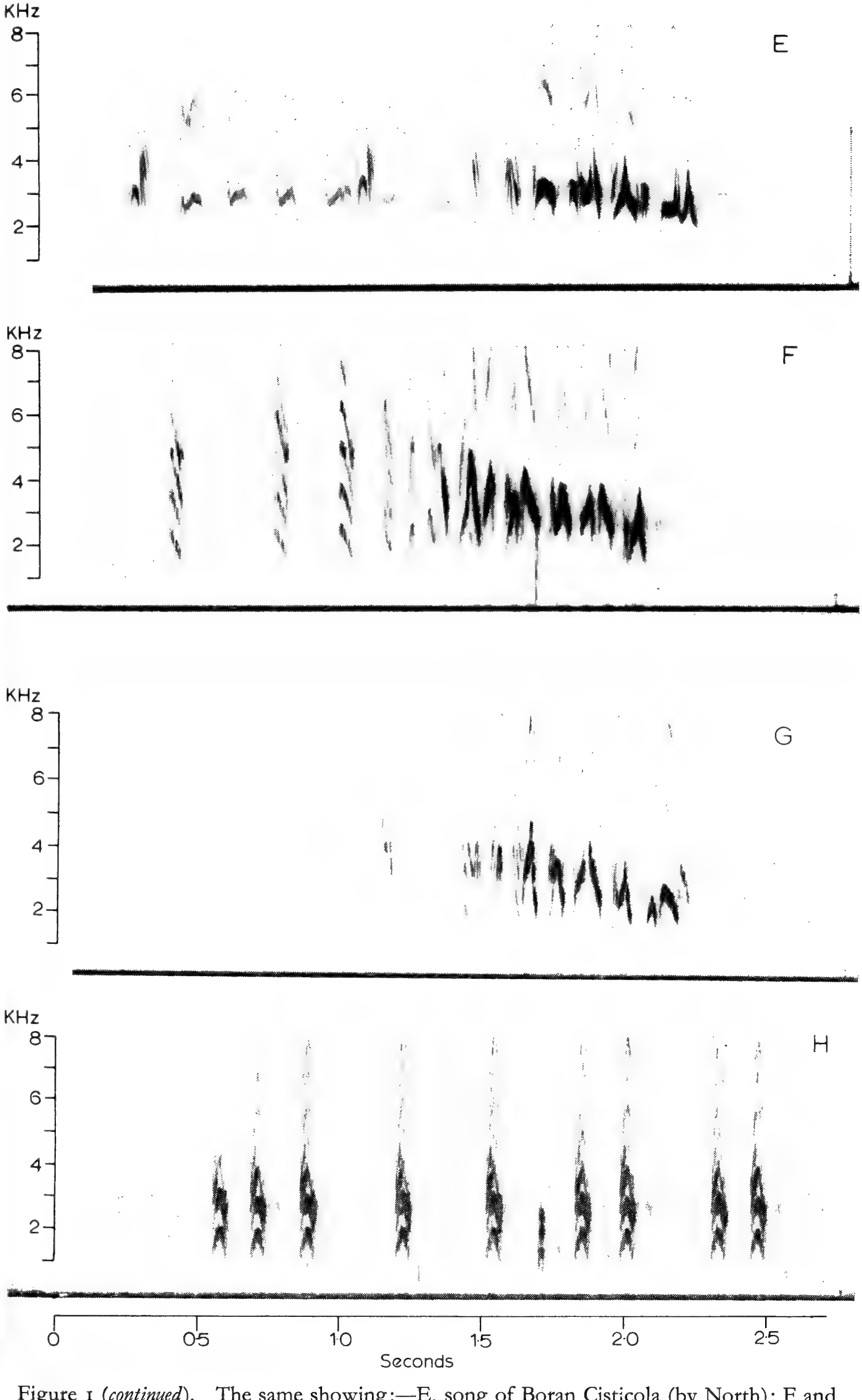


Figure 1 (*continued*). The same showing:—E, song of Boran Cisticola (by North); F and G, song, H, alarm cry, of Boran Cisticola (by author and Follet, at Kebre Mengist).

Dr. Chappuis adds that, comparing North's recordings and ours, in general the songs are identical: the same structure of the initial notes, much the same number of notes in the second part of the phrase, the same form of the notes. Furthermore, the initial notes of the song of Boran Cisticolas in Ethiopia are absolutely identical with those in Kenya. Thus one may conclude finally that these birds constitute a single species, quite distinct from the Rattling Cisticola.

In spite of the fact that our material was not very adequate, we may recount our experience in replaying the song of the one species to the other near Neghelli. When we played to *chiniana* the alarm cry followed by the song of the Boran Cisticola, it replied with cries and some song, but the reactions did not attain the intensity, not to say violence, provoked when its own song was played to the Boran. On the other hand, when the cries and song of *chiniana* were played to the Boran, a positive response of cries and song were evoked. The difference in the intensity of the replies is perhaps explained by a difference in the biological cycles: the fact that *chiniana* was at the finish of the postnuptial moult and was singing relatively little, whereas the Boran, although it had certainly also finished breeding, had only just started to moult and was still singing quite well. This confirms the suspicion of Hall & Moreau (1970: 167) that *chiniana* has an earlier breeding season than the Boran. Our observations also showed clearly that the two species, when they occur alongside one another, are mutually exclusive territorially. It would seem, although our data are too fragmentary to confirm it, that *chiniana* and the Boran can have contiguous territories but not actually overlapping.

HABITAT

Benson (1946: 201), in Sidamo, has stressed that *chiniana* inhabits typically "the open 'thorn-acacia' country at 3000–4500 ft.", whereas the Boran lives in "the drier highlands at 5000 ft. and over . . . in open country where there is low bush growth". In general we confirm this difference in habitats. We found *chiniana* only in dry thorny savannas, always in areas where there are relatively low and scattered shrubs, interspersed with low, thick bushes, thinly scattered. At Arero, however, we observed and collected it in cultivated hollows, partly fallow, where there were only some poorly developed bushes on the edge of a streamlet.

On the other hand, the Boran inhabits dense tree savannas of a dry type, though also fairly humid as for example at Kebre-Mengist in Sidamo. Thus it is common in glades and on the outskirts of light forest below 1800 m, in open evergreen shrubby growth, in degraded vegetation on the edges of roads, in man-made clearings reminiscent in appearance of the Mediterranean garrigue (as in the Gibe valley in Kaffa, where it is also found in quite open places). In general, it frequents fairly dense but broken shrubby formations.

Around Neghelli and towards Arero and Yavello, and doubtless beyond, the two species come into contact, and in certain places live side by side in the same habitat. However, closer observation shows that *chiniana* prefers the poorer, more open areas, in which it is much more abundant than the Boran, which dominates on the other hand when the height and density of the woody vegetation increases. Thus for example near Neghelli and Yavello they both occupy thornbush, but the Boran prefers the more luxuriant spots (dense shrubby or bushy growth with a more herbaceous floor), whereas *chiniana* prefers the more open spots in which the acacias are reduced to dispersed clumps and grass exists only in strands around such clumps. The Boran sings especially at the tops of tall acacias (song post between 3 and 5 m, or even

higher), whereas *chiniana* sings low down in bushes or on the tops of grass-stems (song-post between 0·5 and 2·5 m, rarely higher). It would also seem that there is a difference in the feeding zones: the Boran living between 1 and 5 m and foraging between 1 and 3 m, with *chiniana* keeping preferably to below 2 m and foraging essentially in grass and low branches of bushes between ground-level and 1 m.

As to altitude, we do not think that there is any clear-cut difference between the two species. *Chiniana* was found between 920 and 1620 m, the Boran between 1200 and 1800 m (the altitudes were taken with the aid of an altimeter previously adjusted in the Geophysical Laboratory, Haile Sellassie I University, Addis Ababa).

MORPHOLOGY

The examination of specimens of the two species duly identified by voice has permitted the recognition of a certain number of differences in colour, form and measurements. Thus the series brought back in 1971 show the following differences in the Boran Cisticola from the Rattling Cisticola:—

(a) The back is more uniform, less streaked. The basic colour of each feather is brown, clearly lighter and with a pronounced russet tone. The streaks of the mantle, although practically non-existant in worn plumage, are narrower and above all browner, less black.

(b) The crown is browner, less of a warm chestnut, almost unstreaked, while in *chiniana* it is obscured by dark streaks.

(c) The underparts are whiter, less buff.

(d) The tenth (outermost) primary is shorter (see measurements below).

(e) The wing-coverts (especially the greater and median) and the alula are bordered with whitish or very light buff and contrast with the reddish buff edges to the outer webs of the remiges. In *chiniana* the wing-coverts and the remiges are fringed with rufous or reddish fawn uniformly dark.

(f) The rectrices are narrower. On the under surface, the extremity beyond the subterminal black spot is practically of the same colour as the basal part of the feather (see also Benson 1946: 201), whereas in *chiniana* this apical zone is white or washed with fawn, and contrasts clearly with the colour of the base of the feather. The subterminal black spot in the Boran is in fact no more than blackish, somewhat diluted as remarked by Benson (*loc. cit.*), and is concentrated on the inner web, being absent or almost so on the outer. In *chiniana* this spot is more definitely black, and is equally well defined on both webs, so that it may fairly be termed a bar. This black marking is also less extensive in the Boran than in *chiniana* (less than 5 mm in extent, as against 6–8 mm). In the Boran, too, it is barely discernible on the upper surface, whereas in *chiniana* it is still clear. Furthermore, in the Boran black is entirely absent on the central pair of rectrices, while in *chiniana* a rudimentary vestige is still visible.

(g) The bill is shorter, more thickset at the base, resembling somewhat in profile, in miniature, that of *Cisticola natalensis* (Smith).

The above differences being evident in autumn specimens (Boran starting to moult, *chiniana* finishing), an attempt was made to find them in specimens in fresh dress. A comparison of our material with that in the British Museum (Natural History), wherein is the series collected by Benson (most of which are Boran, as their collector thought) has confirmed the validity of the above

findings. In fresh plumage the Boran Cisticola has however the wing speculum (edges of the greater and median coverts) a little more buff than in worn plumage, but nevertheless this speculum contrasts with the edges of the remiges. The underparts are decidedly whiter than in *chiniana* in the same stage of plumage, in which they are much washed with buff, with white only in the centre of the abdomen and of the throat. Furthermore, *chiniana* has on the sides of the chest a dark greyish wash which tends to make it appear darker on the underparts. The pale edges of the mantle feathers in the Boran in fresh dress have a greyish rather than fawn tone, and are narrower than in *chiniana*, which explains why, with wear the back in the Boran appears the more uniform of the two species.

Until the present, these two cisticolas were placed together in a single species as *Cisticola chiniana bodessa* Mearns, cf. White (1962: 663). Thanks to the great kindness of Prof. S. Dillon Ripley and Dr. R. L. Zusi, we have examined the type of this form, described under the name *C. subruficapilla bodessa* by Mearns (1913: 2–3). It shows all the characters of the Boran Cisticola, the scientific name of which must accordingly be *Cisticola bodessa* Mearns. The populations of *chiniana* of Ethiopia and northern Kenya must be called *C. chiniana fricki* Mearns, of which we have also examined the type (cf. Mearns 1913: 3–4), and which corresponds well with specimens which we have collected after having identified them from the song as Rattling Cisticolas.

The birds of Kaffa (4♂♂, 1♀) differ from the other Boran Cisticolas, and seem sufficiently distinct to bear their own particular name:

Cisticola bodessa kaffensis subsp. nov.

Description: This form differs from the nominate by its clearly darker colour. The crown and the mantle are almost concolorous. The top of the head, of a less warm tone than in true *bodessa*, is scarcely more rufous than the mantle, which is a duller, darker, brown, lacking any rufous; in addition the mantle is practically uniform even in fresh dress, at the most only with very ill-defined streaking. The primaries are bordered with a more pronounced, darker, reddish, while the margins of the lesser and median wing-coverts are browner, less greyish. The thighs are likewise a darker buff. The underparts appear darker, being slightly more buffy and, more especially, more washed with a darker brownish grey on the flanks and sides of the chest. Also, the extremity of each rectrix is lighter, more washed with buff, in contrast to the rest of the feather. The bill seems to be longer.

Distribution: So far only known from the valley of Gibe in the province of Kaffa.

Type: ♂ adult: between Walkite and Abalti, *ca.* 8°12′N, 37°40′E, 7 June 1968. Collector's no. 1438. In the Muséum National d'Histoire Naturelle de Paris. Wing 67, tail 63·5, bill from skull 14 mm; weight 20 g.

The material collected from Marsabit (3♂♂ in the British Museum) is not separable from nominate *bodessa*.

To return to our comparison between *chiniana* and *bodessa*, in measurements the two species are very similar. The following figures show such differences as do exist (each set of figures shows respectively the mean, the range in brackets and the number of specimens examined):—

	Wing	Tail millimetres	Bill from skull	Weight grammes
		C. b. bodessa		
♂♂	66·5 (60–71)	57·1 (52–63)	13·5 (12·5–14·5)	19·5 (16–22)
	43	41	39	27
♀♀	53, 55	48, 50	11, 13	12, 13
	2	2	2	2
		C. b. kaffensis		
♂♂	66·0 (64–68)	58·6 (52·5–63·5)	14·0 (13·5–15)	20·0 (19–22)
	4	4	4	4
♀♀	52	45	13	14
	1	1	1	1
		C. chiniana fricki		
♂♂	67·0 (60–70·5)	57·3 (52–62)	14·6 (13–16)	20·6 (18–23)
	39	37	37	21
♀♀	55·2 (51·5–58)	50·8 (50–53)	13·0 (12–14)	14·8 (12–20)
	6	5	6	5

In order to take better account of structural differences between the two species, we have shown on histograms the frequency of length of wing and bill of each (Fig. 2). The similarity of size is reflected by length of wing. *Chiniana* is only slightly larger than *bodessa*, but on the other hand there is a more definite difference in length of bill.

In the course of collecting, we were struck by the difference in the relative length of the tenth (outermost) primary. To express the validity of this, we have measured the difference in length between the extremity of the tenth primary and that of the tip of the wing (tip of the longest – usually the seventh – primary). Figure 3 shows that at an equal wing-length *bodessa* has in general a shorter tenth primary, although there is a considerable zone of overlap. This is reduced if one compares bill-length to the percentage of difference between the tip of the wing (longest, seventh primary) and the tip of the tenth primary in relation to the wing-length. This percentage is another way of expressing the relative length of the tenth primary to the full wing-length. These two structural differences in the wing and the bill, combined with the colour differences already described, permit the identification of single, isolated specimens.

MOULT

Lynes (1930: 270–271), not knowing that there were the two species, qualified as "irregular" the mode of moult, stating that in Arussi, Sidamo and the Rift Valley, from Lake Zwai to Stephanie (that is, in the zone where both species exist) there were two modes, seasonal and perennial, although elsewhere the seasonal mode was "dominant if not exclusive" (see also Friedmann 1937: 200). According to the specimens which we collected and those in the British Museum, it appears that *bodessa* has a complete moult between the end of October and the beginning of January, and *chiniana* from September to mid-December. This is general, and affects all of the two populations. A *bodessa* in moult of the primaries was obtained on 22 June at Marsabit by North, and a *chiniana* starting to moult on the River Gato (near Gardula) on 31 August. Indications of "spring" moult have been noticed in specimens of *bodessa* as follows: one in moult of the primaries at Neghelli in

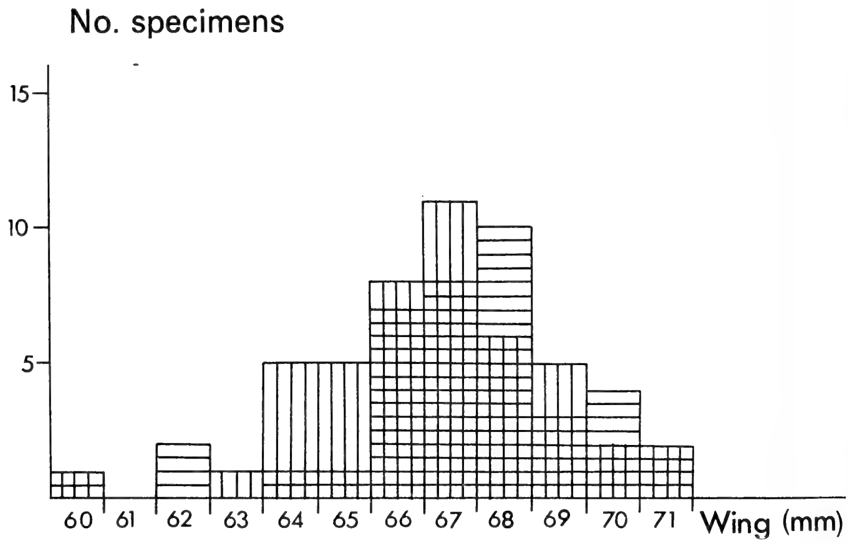
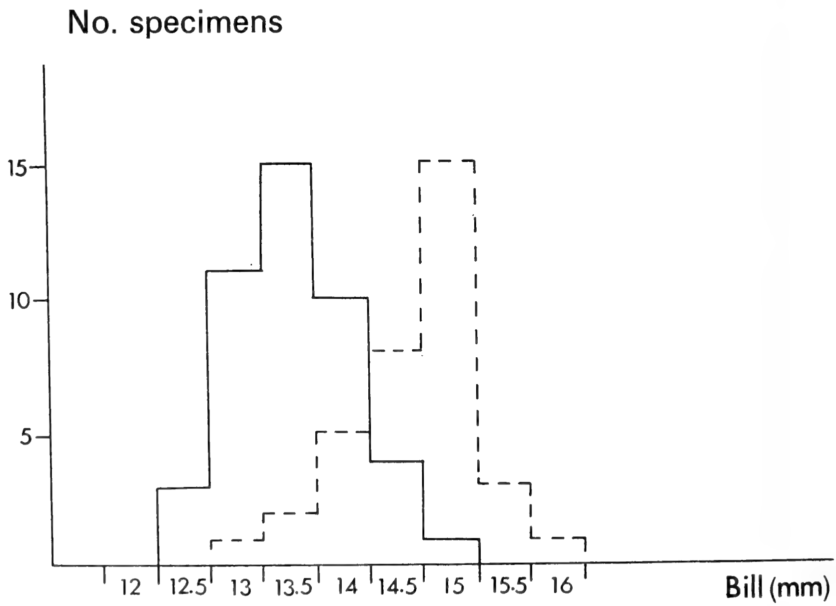


Figure 2. *Above:* Wing-lengths of *Cisticola bodessa* (vertical lines) and of *C. chiniana fricki* (horizontal lines) (♂♂ only). *Below:* Bill-lengths of *C. bodessa* (continuous line) and of *C. c. fricki* (broken line) (♂♂ only).



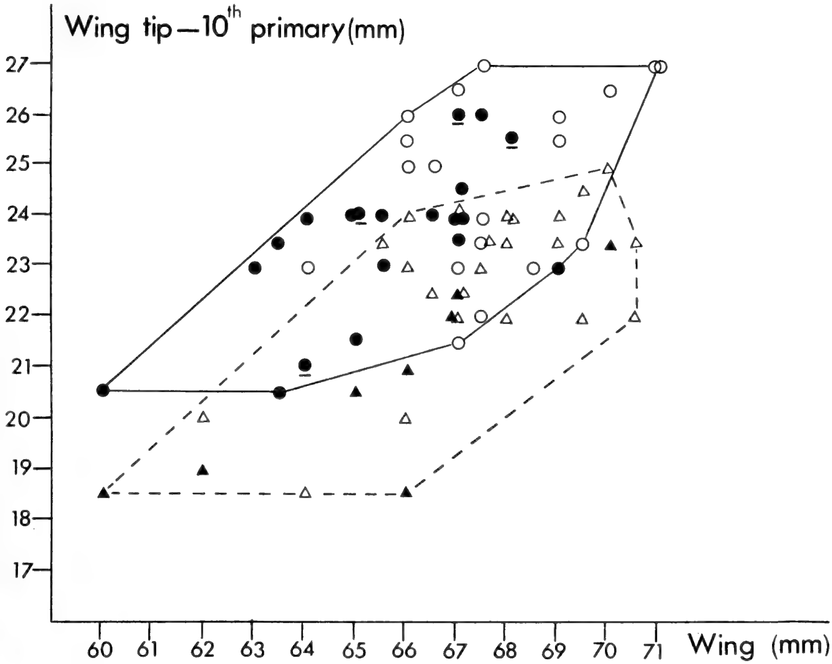
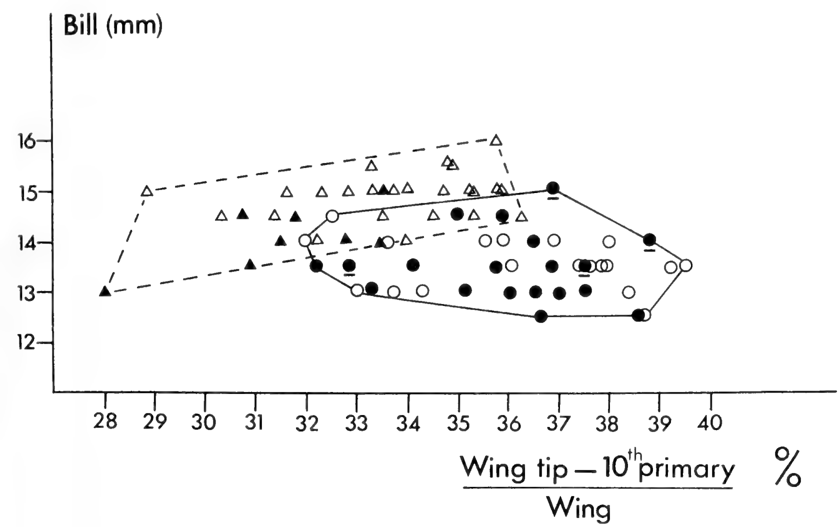


Figure 3. *Above:* Relation between wing-length and difference between tip of wing and tip of tenth (outermost) primary (♂♂ only). *Below:* Relation between bill-length, and percentage of difference between tip of wing and tip of outermost primary to wing-length (♂♂ only). In both graphs *C. bodessa* is shown by circles, *C. chiniana fricki* by triangles. Solid symbols: identification by song. Hollow symbols: identification from specimens only. Underlined symbols: *C. b. kaffensis*.



Sidamo on 15 May; two showing signs of moult of the rectrices, secondaries and body plumage in Kaffa on 7 and 19 June; likewise in *chiniana*, two specimens showing moult of the median rectrices at Lake Margherita in the Rift Valley on 28 April and 2 May. This "spring" moult seems to affect only a very small number of individuals, contrary to the "autumn" moult, which appears to be the true moult of the populations as a whole. Further investigation in the field is necessary to establish clearly the cycle of moult of the two species; all the more so because the cycles of reproduction and moult must certainly vary locally in accordance with the incidence of the rains.

DISTRIBUTION

Ash (1974) has outlined the distribution of the two species in Ethiopia according to his personal observations which it is not necessary to discuss here. We give below a summary of our own by provinces, adding to it information obtained from the material in the British Museum. We will not consider the data obtained by North in Kenya which also concerns the Boran Cisticola.

Eritrea: A ♂ from Nefasit (15°19′N, 39°04′E), 8 June 1951, despite its bad state of plumage, seems to be a *bodessa*. Smith (1955: 75, under *C. chiniana bodessa*) states "Scarce and local . . . on eastern escarpment between 4000–6000 ft". It would be desirable to examine a series of specimens of this apparently isolated Eritrean population.

Harrar: A ♂ *bodessa* was collected by Pease on 15 December 1900 at Hojojo, west of Mieso (*ca.* 9°10′N, 40°40′E). Ogilvie-Grant & Reid (1901: 654), writing of this specimen, have already remarked that it differs from others in having the streaking of the back almost obsolete.

Shoa: There are specimens of *bodessa* collected along the Awash River on 19 December 1900 by Pease and at "Manniballa" on 14 July 1902 by Degen. This latter locality must be the same as the "Mallabella" (*ca.* 9°10′N, 39°40′E) of Pease if reference is made to the itineraries of the two expeditions (Ogilvie-Grant & Reid 1901: 609 and Ogilvie-Grant 1904: 254). The Boran Cisticola was also well represented on 1 April and 10 October 1971 in the region of Welenchiti (8°40′N, 39°25′E) and on 1 April at Sodere (8°20′N, 39°30′E).

Chiniana was heard singing (it was not at all rare) in many localities in the Rift Valley during May, June, July, September, October and December in 1968–71, especially between Modjo (8°39′N, 39°05′E) and Shashemene (7°12′N, 38°37′E). It was also heard near Nazareth (formerly Adama, 8°31′N, 39°12′E) and near the crater lake of Debre Zeit (8°48′N, 38°55′E). We have examined specimens collected in February from Jawaha (*ca.* 10°N, 40°E), a locality investigated by Blundell and Lovat, see Ogilvie-Grant (1900: 118), in April from Dembi (visited by Antinori and probably in the Rift mid-way between Addis Ababa and Lake Zwai), in January from Lake Zwai (*ca.* 8°00′N, 38°50′E) and in September from Kambata (*ca.* 7°30′N, 38°20′E), to the south-west of Lake Shalla (see Ogilvie-Grant 1913: 555 and pl. 12).

Arussi: We have examined specimens of *chiniana* collected by Zaphiro in January/February at Djila, Dalota and Bourka (localities to the east of Lake Zwai, between this lake and the high valley of the River Cathar; see Ogilvie-Grant 1913: 554).

Sidamo: It is in this province that the two species seem most abundant. *Chiniana* was found around Lake Awasa (7°N, 38°25′E) in May/June 1968, then in large numbers in a radius of 15–20 km around Neghelli (5°20′N, 39°35′E) in May 1968 and October/November 1971, thence very commonly

in November/December 1971 to Arero (4°48′N, 38°50′E), onwards almost throughout to Yavello (4°57′N, 38°08′E), and for at least 50 km to the west and 70 km to the south thereof (and see also Benson 1946: 200).

Bodessa was abundant in May 1968 and October/November 1971 at Kebre Mengist (formerly Adola, 5°54′N, 38°59′E) and 50 km east of Neghelli (*ca.* 5°10′N, 40°05′E) towards Filtu. In fact its density was highest between Wadera (5°40′N, 39°20′E) and 15 km north of Neghelli (*ca.* 5°23′N, 39°35′E), in this region indeed to the exclusion of *chiniana* (see also Ash's records). In November/December 1971, the Boran Cisticola was equally well represented around Arero, and in the vicinity of Yavello from 10 km to the north thereof to 75 km to the south (that is, where Benson *op. cit.* found it himself).

Gemu-Gofa: We have examined specimens of *bodessa* dated June and August from Konso, between Lakes Shamo and Stephanie, for June from Wurke (*ca.* 6°30′N, 37°30′E, see Ogilvie-Grant 1913: 554), for May from Bodessa (5°05′N, 37°32′E, see Friedmann 1930: 7–8), and for January from Muji, to the north of Lake Rudolf (this locality is not shown on any map; specimen obtained by Haverstadt). Above the escarpment dominating the western shore of Lake Margherita, at several points, between Soddu (6°49′N, 37°41′E) and Arba Minch (6°02′N, 37°36′E), we heard the song in May 1968. In this same region *chiniana* was common at the bottom of the escarpment, on the edge of the lake. The type of *fricki*, belonging to this latter species, came from "White Abaya Lake" (=Lake Shamo), and was collected on 20 March 1912. We have also examined a series of specimens of *chiniana* from Konso, in the valley of the River Gato, collected by Zaphiro in August 1910.

Kaffa: In June 1968 and November 1971 we found *bodessa* well represented in the Gibe valley between Walkite (8°15′N, 37°50′E) and Abalti (8°10′N, 37°35′E), and above the escarpment or a further 6 km to the south-west of Abalti. It was apparently in this same area that Ash found the species in May and June 1971. In June 1968 singing was heard in clearings near Agaro (7°50′N, 36°38′E), but not again in November 1971. In the meantime the habitat had been considerably modified by the construction of an all-season road, accompanied by cultivation and human activity in general.

ACKNOWLEDGEMENTS

I must express my gratitude to my travelling companions Dr. J. Prévost and N. Follet, without whom this study would have been impossible. I wish also to thank Dr. J. S. Ash, who helped me with his knowledge of Ethiopian birds; Dr. D. W. Snow and I. C. J. Galbraith, who gave me every facility while I was working in the British Museum (Natural History) at Tring; and Prof. S. Dillon Ripley and Dr. R. L. Zusi, who were kind enough to lend me the type specimens described by Mearns. Special mention must be made of C. W. Benson, who has commented on this paper and translated it into English; and of my friend Dr. C. Chappuis, who made the sonagrams and from whom I have profited by his knowledge of birds in general and of cisticolas in particular. Mrs. J. Hall-Craggs also most kindly assisted in the final preparation of the sonagrams before they were sent to the printer; likewise J. W. Rodford in that of Figures 2 and 3.

SUMMARY

Based on differences in voice and to some extent in ecology, it was suspected more than 30 years ago that there were two species of cisticola in southern Ethiopia. In the meantime, both have been known as *Cisticola chiniana bodessa.* The present investigation has confirmed these differences,

and has also shown that there are small differences in colour of plumage and in structure. The two species may be known as the Rattling Cisticola *C. chiniana*, widespread in southern and eastern Africa, and extending into the Shoa province of Ethiopia; and the Boran Cisticola *C. bodessa*, known from Nanyuki and Marsabit, northern Kenya, and widespread in Ethiopia, occurring even in Eritrea. A new subspecies of the latter, *C. b. kaffensis*, is described from the Gibe valley, Kaffa. The main factor keeping the two species apart is voice. In some places (as in Sidamo) they occur alongside one another, but are territorially mutually exclusive.

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Cape Grass Owl in Ethiopia

by D. A. Turner

Received 30th October, 1973

The Cape Grass Owl *Tyto capensis* ranges through the greater part of southern Africa northwards to western and central Kenya, where it is a rather rare and local species frequenting damp open grassy areas. Mackworth-Praed & Grant (1970) also indicate the existence of an isolated population on Manenguba Mt., western Cameroun. Urban & Brown (1971) do not list this species for Ethiopia, and Leslie Brown informs me that even the Barn Owl *Tyto alba*, widely distributed over most of Africa south of the Sahara, is unaccountably rare in Ethiopia.

On 9 May 1973 I observed an owl asleep on a telegraph pole in the middle of a vast open grassy area near Tefki, some 50 km south-west of Addis Ababa, Ethiopia. The bird was observed for some 15 minutes at a distance of approximately 75 yards, with the aid of $\times 8$ binoculars. It was clearly a *Tyto* owl, the facial discs being very distinct, as were its orangey-buff under parts lightly spotted with dark brown or black. The upper parts and wings were uniform dark brown. The area at this time was extremely dry, although it was very apparent that it became a vast swampy area during the rainy season. When I left, the owl was still asleep, but had disappeared when I returned to the area later in the afternoon.

A recent examination of skins in the National Museum, Nairobi, of all medium sized owls leaves me with no doubt that the bird I saw was a Cape

Grass Owl. This would appear to be the first record of this species in Ethiopia and a considerable northward extension of its previously known range.

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Locustella naevia in Ethiopia

by J. S. Ash & George E. Watson

Received 9th October, 1973

Whilst one of us (J.S.A.) was routinely trapping birds and mammals at Koka (8°27′N, 39°06′E) at 1445 m in Shoa Province, Ethiopia, in connection with research on viral infections, a Grasshopper Warbler *Locustella naevia* was netted at 1130 on 24th February 1973. It weighed 10·2 g, wing length 62 mm, and was judged on the basis of colour to belong to the eastern race *straminea*. Subspecific identification was confirmed by John Farrand, Jr., at the Smithsonian Institution, where it is deposited (USNM 552733).

Previously only one other Ethiopian record of *L. n. straminea* has been reported, namely from Abroberifaghé along the River Hawash in the Danakil in February 1947 (Guichard 1948). Until the more recent records from Senegal (Moreau 1972) this has remained the only known occurrence south of the Sahara. However, we have been unable to trace this previous Ethiopian specimen. The record is included without date or authority in Meinertzhagen (1954), Mackworth-Praed & Grant (1960), White (1960) and in the recent Ethiopian checklist (Urban & Brown 1971). Moreau (1961), however, cites Meinertzhagen (*loc. cit.*) as authority for the record but he later (1972) gives Thesiger & Meynell (1935). The species, however, is not mentioned by Thesiger & Meynell. There is no voucher specimen in either the British Museum or Meinertzhagen collections (D. W. Snow, *in litt.*, 17 May 1973)*. C. W. Benson (*in litt.*, 21 July 1973), who checked independently the British Museum collections, also failed to find the specimen. He searched the register and found that three of the four species covered by Guichard's (*op. cit.*) note were duly recorded, but not the *Locustella*. One might assume that the specimen in question never reached the museum if it were not for the statement at the end of Guichard's note, "All the above-mentioned specimens are now in the British Museum". Alternatively, the specimen may have been lost prior to registration. This supposition is supported by the fact that only eight out of the nine *Sarothrura ayresi* sent to the museum were registered. Guichard was a careful and reliable observer, and notwithstanding the fact that his specimen of *L. naevia* cannot be traced now we are inclined to accept it. The species is not included in the catalogue of the collection made during the Italian occupation (Italian Game Department, unpublished, photostat copy of disintegrating original in J.S.A.'s possession).

Moreau (1972), in discussing the wintering range of races of *L. naevia*, follows others in identifying the earlier problematical Ethiopian bird as *L. n. straminea*, mentioning that both this and another eastern race, *L. n. mongolica*,

*A. D. Forbes-Watson (pers. comm.) asked Thesiger in Kenya on 22 June 1973 about the problematic record. Thesiger had no recollection of having collected the species and stated that if the record was not cited in the 1935 paper, nor was there a specimen in the British Museum, it never in fact existed.

winter regularly in India (Vaurie 1959). Moreau's review of records in the western Sahara and Senegal does not include mention of the race involved, although one at least was the European race *L. n. naevia* (Roux 1959), to which they are presumably all referable. Field (1973) has reported recent observations of Grasshopper Warblers from further south in Sierra Leone, West Africa.

The present bird was in dry *Acacia*/*Balanites* bush *ca.* 1/2 mile from the lake shore. Other Palaearctic migrants, many of which must have over-wintered, caught in the same habitat at the same time, included: 11 Hoopoes *Upupa epops*, three Scops Owls *Otus s. scops*, two Wrynecks *Jynx torquilla*, five Pied Wheatears *Oenanthe pleschanka*, two Stonechats *Saxicola torquata armenica*, 24 Redstarts *Phoenicurus p. phoenicurus* and *samamisicus*, three Bluethroats *Luscinia svecica magna*, three White-throated Robins *Irania gutturalis*, 13 Nightingales *Luscinia megarhynchos*, 12 Lesser Whitethroats *Sylvia curruca*, three Whitethroats *S. communis*, seven Blackcaps *S. atricapilla*, four Barred Warblers *S. nisoria*, four Olivaceous Warblers *Hippolais pallida elaeica*, 24 Reed Warblers *Acrocephalus scirpaceus*, one Willow Warbler *Phylloscopus trochilus*, 29 Chiffchaffs *P. collybita*, eight Masked Shrikes *Lanius nubicus* and four Red-tailed Shrikes *Lanius collurio isabellinus*.

During 1970–73, 9639 birds have been netted on 70 days at the Koka site (6 in February, 29 in March, 19 in April and 16 in December), and at least 2624 (27%) of these were migrants, but no other Grasshopper Warblers were seen. Similarly, much netting has been done in other sites in southern Ethiopia, including two in the Danakil, all of which have provided many migrants, but not *L. naevia*. Unless the species is confined largely to small areas of specialised habitat, which have not been worked yet, we suspect it cannot be more than a rare and casual winter visitor to East Africa south of the Sahara.

The opinions and assertions in this scientific report are those of the authors and do not necessarily reflect the official views of the Navy Department or of the naval service at large. The research was supported in part by the Bureau of Medicine and Surgery and the Office of Naval Research under Contract No. N00014–67–A–0399–0009 and Bureau of Medicine and Surgery Work Unit MR041.09.01–0014DGHJ. We are grateful to C. W. Benson, J. Farrand, Jr., the late K. D. Smith and D. W. Snow for their help.

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Edited by

C. W. BENSON

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 94 No. 2 Published: 20 June, 1974

The six hundred and eighty-seventh meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 19th March 1974 at 7 p.m.

Chairman: Sir Hugh Elliott, Bt., O.B.E.; present 22 members and 11 guests.

The speaker was Professor W. H. Thorpe, SC.D., F.R.S., who addressed the Club on "Individuality in Bird Voices" and illustrated his lecture with tape recordings and slides.

Annual General Meeting

The eighty-second Annual General Meeting of the British Ornithologists' Club was opened at 6 p.m. on Tuesday 14th May 1974 at the Café Royal, 68 Regent Street, London, W.1. Eight members were present.

The Hon. Secretary reported that the Chairman and Vice-Chairman were both engaged on work abroad and had sent apologies for their absence and the Editor had done likewise. Dr. J. F. Monk proposed, and the Hon. Secretary seconded, that Mr. P. Hogg should take the chair, and this was agreed. The Minutes of the eighty-first Annual General Meeting (*Bull. Brit. Orn. Cl.* 93: 49, 52) were approved and signed.

The Hon. Secretary presented the Report of the Committee for 1973 (*Bull. Brit. Orn. Cl.* 94: 1–2). After a short discussion, Dr. J. F. Monk proposed, and Mr. M. St. J. Sugg seconded, that the Report be adopted, and this was carried unanimously. The Hon. Treasurer reported that it had not been possible to complete preparation of the Accounts for 1973, and consideration of them had, therefore, to be deferred.

On discussion of the *Bulletin*, the meeting noted with satisfaction the high standard of papers. In order to avoid undue delay in publication, the Editor had had to decline some papers, particularly from non-members, of a standard that would have justified acceptance. The Hon. Secretary stated that the printers had just informed the Club of an immediate increase in charges of 15%. This would mean a total rise in printing costs of 48% in the last two-and-a-half years, and the Committee would have to consider how to meet the cost of the latest increase.

There being no nominations additional to those of the Committee, the following were declared elected:—

Chairman: Mr. J. H. Elgood (*vice* Sir Hugh Elliott, who retired on completion of his term of office).

Vice-Chairman: Mr. P. Hogg (*vice* Mr. J. H. Elgood).

Editor: Sir Hugh Elliott, Bt., O.B.E. (*vice* Mr. C. W. Benson, O.B.E., who retired on completion of his term of office).

Hon. Secretary: Mr. R. E. F. Peal (re-elected).

Hon. Treasurer: Mr. M. St. J. Sugg (*vice* Mr. P. Tate, who retired on completion of his term of office).

Committee: Dr. C. J. O. Harrison and Lieut.-Colonel J. R. Neighbour (*vice* Dr. P. J. K. Burton, who retired by rotation, and Mr. P. Hogg).

Tribute was paid from the chair to the great amount of work which Sir Hugh Elliott had done for the Club as Chairman. In particular, he had

devoted much time to cataloguing the stocks of back-numbers of the *Bulletin* and moving them to new storage at Tring, to ordering the mailing lists for the *Bulletin* and to arranging that separates should be produced for authors. A vote of appreciation to Sir Hugh was passed unanimously. Mr. Hogg thanked Mr. Tate for all he had done for the Club as Hon. Treasurer. He had been in that office for 12 years, a period not exceeded by any previous Hon. Treasurer and had devoted very much time and work to the Club. A vote of thanks to Mr. Tate was passed unanimously. The Hon. Secretary said that the meeting was well aware of its debt to Mr. Benson and it was hoped that he would be willing to resume office as Editor in 1975.

It was proposed by Mr. D. T. Holyoak and seconded by the Hon. Secretary that the meeting be adjourned until 6 p.m. on Tuesday 17th September 1974 at the Café Royal, 68 Regent Street, London, W.1 for consideration of the Accounts for 1973, and this was carried unanimously.

The meeting was adjourned at 6.30 p.m.

A re-examination of material of the extinct marabou stork, *Leptoptilos falconeri*: with descriptions of some new species

by C. J. O. Harrison

Received 1st February, 1974

Two marabou storks have been named as existing in pre-pleistocene periods. *Argala* (= *Leptoptilos*) *arvenensis* was listed by Milne-Edwards (1871) as a species of the French Miocene, but it is a nomen nudum. No material is known and it is possible that proposed specimens may have been referred to other species.

In the same work Milne-Edwards (1867–71), in a footnote to page 450 (incorrectly stated to be 449 in Brodkorb 1963), proposed the name *Argala falconeri* for another species. Brodkorb (1963) lists this also as a nomen nudum and regards Davies (1880) as the first valid description. He appears to have overlooked that on page 449 Milne-Edwards refers to four specimens from the Siwalik Hills of India, in the collection of the British Museum (Natural History) and that the name is then proposed with reference to these. They are listed as the distal and proximal ends of a tarsometatarsus, and two distal ends of tibiotarsi, measurements are given, and the greater size in comparison with Recent species is indicated as a valid character for specific separation. *Leptoptilos falconeri* (Milne-Edwards) 1868 would therefore appear to be the original description.

Davies (1880) refers to five specimens, four presented to the British Museum (Natural History) by Col. Sir P. T. Cautley in 1842, and one presented by Charles Falconer in 1868, under this name. Lydekker (1884) refers a further three specimens to this species, two from Cautley and one from Falconer, and in describing the largest distal end of the tibiotarsus says it "may be considered as the type". In a later catalogue (1891) he lists all specimens without special reference to this one; but Brodkorb (1963) lists it as the designated lectotype. It is an unfortunate selection in that the specimen, apart from its larger size, shows no useful characters for separation from Recent species.

This material referred to *L. falconeri* has been re-examined and I am of the opinion that it comprises the remains of three different bird species. Five

specimens, including the lectotype, appear referable to a very large marabou stork under the existing name. Although there is no indication that these were originally associated, the similarities of relative size and structure appear to justify referring them to a single species.

The lectotype tibiotarsus shows no obvious characters, apart from a much larger size, which would separate it from the corresponding bone of the larger Asiatic species of the Holocene, *L. dubius*. The other, paratypical specimens show distinct differences in some points of structure which would justify specific separation, and in which the Pliocene bird is more different from the three Recent species than they are from each other.

In the comparison of Pliocene and Holocene material this similarity in one bone and differences in others may have particular relevance. Although it has been claimed that some Recent species existed in the Pliocene, Brodkorb (1971) contends that the Pliocene birds were specifically distinct and that in general Recent species evolved during the Pleistocene. If the Pliocene records are based on single, or few, skeletal elements then a similar situation might occur to that apparently shown by the present species, where a particular bone might give no indication of difference, although differences existed in other parts of the skeleton, and where it might be assumed that a Recent species had been in existence at a much earlier period when a morphologically distinct, although possibly ancestral, form might be involved.

The three remaining specimens consist of two distal ends of tibiotarsi, one very incomplete, and the extreme proximal end of a tarsometatarsus with most of the hypotarsus. One tibiotarsal fragment is virtually indistinguishable in size and shape from those of the Recent *L. dubius*. The other more extensively damaged fragment (fig. 4) is that of another stork, possibly related to *Ciconia* species but not definitely referable to known Recent or extinct species, and apparently a new form. It is from a large bird, only slightly smaller than *L. dubius*. The tarsometatarsal fragment appears to be that of a marabou (fig. 3), in some respects most similar to *L. crumeniferus* of Africa. Since, as in the larger species, it is this and not the tibiotarsus that shows characters which might justify specific separation I regard this as the holotype and refer the first of the two smaller tibiotarsi to it.

Rich (1972) has assigned a distal end of a tarsometatarsus and a tibiotarsus from the Upper Miocene Beglia Formation of Tunisia to *Leptoptilos* cf. *falconeri*. The species was a small one, intermediate in size between *L. crumeniferus* and *L. javanicus*. The tarsometatarsus shows a trochlea for the 3rd digit shorter and broader in proportion than that of *L. falconeri*, having a distally short trochlea for the 2nd digit with a posteriorly and proximally displaced outer rim (fig. 1, lower right; 2, top). The tibiotarsus has a larger and disto-proximally longer posterior articular surface in the intercondylar region. There seems no reason to assign this bird to *L. falconeri* other than on its age. It appears to represent a discrete form and I have therefore treated it as a new species, *L. richae*.

The three Recent species of *Leptoptilos* show small interspecific osteological differences. The fossil forms discussed here show, even on the fragmentary material available, more distinct differences which are usually greater than the more recent interspecific variations. It therefore seems best to treat all these earlier forms as separate units distinguished by name.

The relative similarity to each other of the three Recent species within the genus as a whole suggests that they are probably derived at a later period from a common ancestral stock, probably diverging during the period of active speciation in Africa and Asia during the Pleistocene. In addition we

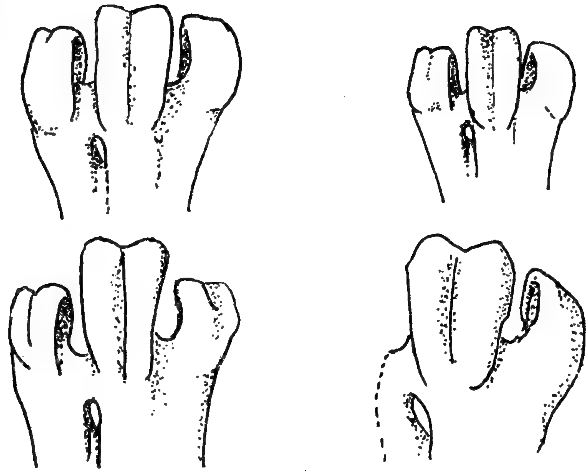

Figure 1. Anterior view of distal end of tarsometatarsus of – top left, *L. dubius*; top right, *L. javanicus*; bottom left, *L. falconeri*; bottom right, *L. richae* (the last, after Rich 1972, is on scale approx. half as large again as others).

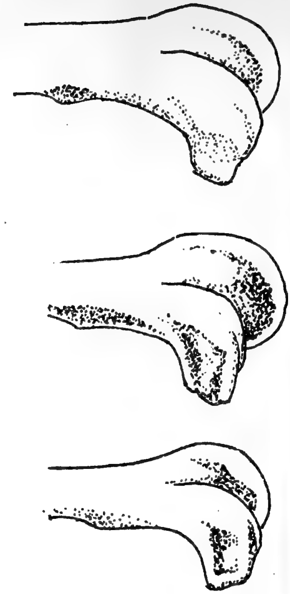

Figure 2. Lateral, internal view of distal end of tarsometatarsus of – top, *L. richae*; middle, *L. falconeri*; bottom, *L. dubius* (the first, after Rich 1972, is on scale approx. half as large again as others).

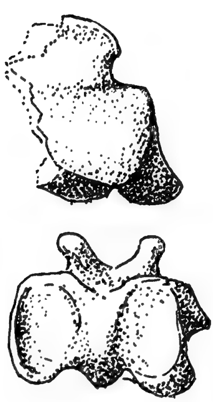

Figure 3. *L. sivalicensis,* holotype, proximal end of tarsometatarsus. Internal and proximal views.

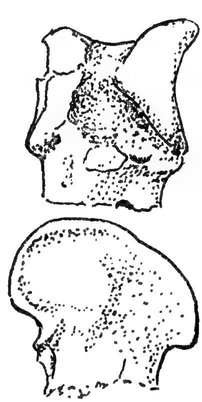

Figure 4. *Cryptociconia indica,* holotype, distal end of tibiotarsus. Anterior and internal views.

have two Pliocene and one Miocene species. There is some evidence that on the fossil forms the anterior condylar projections of the distal ends of tibiotarsi are slightly longer, relative to the width of the ends, than on Recent species; but apart from this the scanty material available does not appear to indicate any general evolutionary trends, unless one interprets the variation in the distal end of the tarsometatarsus (fig. 1) as evidence of a long-term tendency for an increase in the distal projection of the trochlea for the 2nd digit. It is possible that these earlier forms are close to the evolutionary stem of the genus, but there is no definite evidence to indicate whether any should be regarded as ancestral to the Recent species or whether they should be regarded as minor divergences from a main evolutionary trend. There is certainly no good evidence to justify the creation of palaeospecies.

SPECIES DESCRIPTIONS

Leptotilos falconeri (Milne-Edwards) 1868

Emended diagnosis. Very large. On tarsometatarsus, trochlea for third digit large, extending distally well beyond other trochleae. Trochlea for second digit posteriorly displaced. Distal end of humerus with shaft less inflated anconally; groove between attachment of anterior articular ligament and internal condyle broad and deep; entepicondylar prominence and attachment of anterior articular ligament large. Distal end of femur with rotular groove deep and narrow and external edge of popliteal hollow well-defined. First phalanx of second digit of manus with metacarpal facet deep relative to width.

Material. Lectotype, designated by Lydekker (1884), a distal end of a right tibiotarsus, B.M. (N.H.) no. 39735 (erroneously quoted by Brodkorb 1963 as 39753). Paratypes, a distal end of a left tarsometatarsus, B.M. (N.H.) no. 39736; a distal end of a left femur, B.M. (N.H.) no. 39737; and a proximal portion of the first phalanx of the second digit, B.M. (N.H.) no. 39738; all the above specimens including the lectotype being presented by Col. Sir P. T. Cautley in 1842. Also a distal end of a left humerus, B.M. (N.H.) no. 48435, presented by Charles Falconer in 1868.

Occurrence. Siwalik Series, Lower Pliocene; Siwalik Hills, Uttar Pradesh, India.

Description. The lectotype is the distal end of a right tibiotarsus with a short portion of the shaft (fig. 1, lower left; 2, middle). It has undergone some pressure, the internal condyle showing a slight inward deflection and some damage to its outer edges. The shaft has been subject to crushing and deformation, and anterior projections proximal to the condyle are superficially eroded. The characters it shows do not differ distinctly from those of the Recent species, being perhaps most similar to those of *L. javanicus*.

The condyles are stout and rounded anteriorly and posteriorly, and concave on the anterior outer surfaces. The internal ligamental prominence is large. There is a large, rounded and relatively deep intercondylar hollow distal to the supratendinal groove.

The distal end of a left tarsometatarsus is broken off at the metatarsal facet. It is in good condition with the posterior tips of the outer trochleae and the internal posterior edge of the trochlea for the 2nd digit showing some wear and erosion. In general it is very similar to the tarsometatarsus of Recent species but the trochlea for the 3rd digit is larger, extending further distally and more prominent anteriorly. The anterior edge of the external rim of the trochlea for the 2nd digit is slightly more prominent laterally.

The distal end of the left femur is broken off just proximal to the popliteal area. The fibular groove and posterior intercondylar fossa are worn and the posterior external condyle edge slightly eroded. Other surfaces show small areas of damage. The rotular groove is deep and well-defined, narrower in comparison to those of Recent species, with a prominent and anteriorly tapering posterior external condyle. The popliteal cavity is deep and appears to have a deep and well-defined inner margin, the external portion of the shaft forming a definite ridge bordering it. This does not appear to be the result of distortion.

The proximal part of the first phalanx of the second digit consists of a little over a third of the bone, with the flange mostly broken away. The proximal end is stout, with the metacarpal facet deep relative to its width.

The distal end of a left humerus is again very similar to those of Recent species. It appears to lack any suggestion of proximal anconal inflation of the shaft however. The attachment surface for the anterior articular ligament forms a blunt and palmarly prominent ridge in these birds and in the present species is particularly prominent; while the entepicondyle appears to show greater lateral projection.

Measurements. *Lectotype*. Greatest length 52·8; width and depth of shaft (damaged) at level of proximal opening of supratendinal bridge 20·4 × 16·8; width at distal end 28·0; width of posterior condylar area 22·9; anterior/posterior thickness of intercondylar groove 22·6; anterior length of external condyle 24·8; anterior/posterior width of internal condyle 34·0, of external condyle 34·8; width of tendinal bridge 8·1 mm. *Tarsometatarsus*. Greatest length 42·6; proximal width and thickness 23. 1 × 1·0; length from mid proximal end of shaft to trochlea for 2nd digit 39·5, to trochlea for 4th digit 39·9; anterior length of trochlea for 3rd digit 25·4, posterior length 17·0, dorsal width 13·4, greatest depth 17·5; same measurements for 2nd digit 19·8, 11·1, 10·1, 17·8; for 4th digit 21·6, 12·0, 10·4, 18·7; greatest distal width 36·0; dorsal distal foramen to external intertrochlear notch 8·2 mm. *Femur*. Greatest length 41·5; greatest width 46·8; anterior/posterior width of external condyle 41·2; distal width of rotular groove 16·1, proximal width 13·8; anterior/posterior thickness of external side 35·3, of internal side 29·0 mm. *Phalanx*. Greatest length 29·2; width of shaft at distal end 12·1; thickness of external side 5·8; width of anterior surface at metacarpal facet 15·7; depth of facet 13·1; posterior/external to anterior/internal edges of facet 15·0 mm. *Humerus*. Greatest length of fragment 66·9; width and greatest thickness of proximal end of shaft 35·7 × 20·7; greatest distal width 57·7; thickness at external condyle, 29·0, at internal condyle 19·8; attachment of anterior articular ligament to ridge of internal tricipital groove 27·5 mm.

Leptoptilos siwalicensis, sp. nov.

Etymology. The specific name is derived from that of the range of hills in which the specimens occurred.

Diagnosis. Moderately large. Proximal end of tarsometatarsus with internal side stout. Hypotarsus only slightly posteriorly elevated. Anterior ends of calcaneal ridges abrupt. Slanting muscle attachment surface at proximal posterior edge of external side large.

Material. Holotype a proximal end of a left tarsometatarsus, B.M. (N.H.) no. 39741, presented by Col. Sir P. T. Cautley in 1842 (fig. 3). Paratype a distal end of a right tibiotarsus, B.M. (N.H.) no. 39734, from the same source.

Occurrence. Siwalik Series, Lower Pliocene; Siwalik Hills, Uttar Pradesh, India.

Description. The holotype is the extreme proximal end of a tarsometatarsus with the greater part of the hypotarsus present but most of the anterior surface missing except in the region of the cotyla (fig. 3). It has a general similarity to those of Recent species, but the internal side at the proximal end is stouter, anterio-posteriorly thicker, where it borders the hypotarsus. The base of the hypotarsus appears smaller, the whole structure projecting less posteriorly. Perhaps partly as a result of this the calcaneal ridges arise more abruptly and the area of posterior surface immediately around them is flatter. The attachment surfaces on the posterior and anterior edges of the proximal end of the external side are large.

The tarsometatarsus is slightly smaller than that of the Recent *L. dubius*. The distal end of a tibiotarsus is very similar to that of the latter species, very slightly larger in the condylar region and with a stouter shaft. Compared with those of Recent species the anterior portions of the condyles, particularly that of the internal condyle, are longer and narrower relative to the width of the distal head.

Measurements. Tarsometatarsus. Greatest length of fragment 34·5; greatest proximal width 28·6; width at cotyla lips 24·3; posterior projection of hypotarsus, to rim of internal calcaneal ridge 19·5; to external calcaneal ridge 16·7; posterior external muscle scar 9·6 × 6·8 mm. *Tibiotarsus.* Greatest length of specimen 61·4; anterior length of internal condyle 18·9; of external condyle 19·0; anterior/posterior thickness at internal condyle 30·6, at intercondylar groove, 19·4, at external condyle 31·6; greatest distal width 24·4; posterior length of external condyle 16·6; width and thickness of shaft c. 35 mm proximal to condyles 15·3 × 13·8 mm.

Leptoptilos richae, sp. nov.

Etymology. The species is named after Mrs. Pat Vickers Rich who described the specimens.

Diagnosis (based on Rich 1972). Tarsometatarsus with trochlea for the third digit relatively short and anteriorly broad. Trochlea for the second digit does not extend as far distally and has the outer rim much reduced and posteriorly and proximally displaced. Internal intertrochlear notch wide. Distal end of tibiotarsus has posterior articular surface of intercondylar region distoproximally long. Internal condyle projects anteriorly beyond external condyle. In external view posterior edge of shaft straight.

Material. Holotype a distal end of a right tarsometatarsus, no. T-3604, Colorado Tunisian Collection, Service Géologique, Tunis. Paratype a distal end of a right tibiotarsus, no. T-1396, in the same collection.

Occurrence. Lower Faunal Level (localities 17 and 20); Beglia formation. Upper Miocene; Bled ed Duoarah, Tunisia.

Description (based on Rich 1972). The holotype is a distal end of a right tarsometatarsus, broken across diagonally a little below the metatarsal facet, and lacking the trochlea for the fourth digit and the lateral side proximal to it (fig. 1, lower right). The trochlea for the third digit is narrow posteriorly with a proximal taper; but anteriorly it is broad in relation to its length. The internal intertrochlear notch is wide, although this is partly modified anteriorly by the projecting flange of the trochlea for the third digit. The trochlea for the second digit is laterally and posteriorly displaced with a distinct external angle at the proximal end. Its concave inner side extends distally for about three-quarters the length of the other trochlea, but its external facet is reduced, and proximally and posteriorly displaced (figs. 1, lower right; and 2, top). The distal end, viewed anteriorly, shows a strong

proximo-external slant, and in lateral view a prominent posteriorly-directed flange is apparent.

The distal end of a tibiotarsus shows the typical rounded anterior and posterior condylar surfaces. The posterior, intertrochlear articulation surface is distoproximally longer than that of other species, and the posterior condylar flanges larger. In distal view the posterior and anterior edges of the internal condyle appear more anterior relative to the external side. In lateral view the posterior of the shaft, proximal to the condyles, is straight. Anteriorly the tendinal canal is not internally deflected where it enters the proximal opening of the supratendinal bridge. The distal opening of the bridge is more medially placed than in Recent species and the internal ligamental prominence is level with the distal edge of the supratendinal bridge and not distal to it.

Measurements (after Rich 1972). *Holotype.* Distal width of trochlea II 6·4; of trochlea III 9·8; internal depth of trochlea II 13·0, of trochlea III 16·0; lateral depth of trochlea II 13·5, of trochlea III 16·4; posterior length of trochlea II 11·9, of trochlea III 15·7; anterior length of trochlea II 17·6, of trochlea III 23·2, width across trochleae II and III 26·0; width and depth of shaft at proximal end of intertrochlear foramen 26·1 × 6·2; length of foramen 5·2; maximum width of foramen 3·7 mm. *Tibiotarsus.* Greatest width across anterior condyles at distal end 18·6; minimum width of posterior condyles at distal end 15·3; greatest width of internal condyle 8·0; anterior length of internal condyle 16·3; anterior/posterior width of external condyle 25·1; width of shaft at proximal end of supratendinal bridge 13·6; width across condyles at their proximal end on posterior surface 8·3 mm.

Cryptociconia, gen. nov.

Etymology. The generic name is formed from the Greek prefix *crypto* (=hidden) and *Ciconia* (=a stork), in reference to the length of time during which this form has been overlooked.

Type species. Cryptociconia indica, gen. et sp. nov.

Diagnosis. Distal end of tibiotarsus has large internal condyle with anterior surface rounded but posterior tapering proximally to an abruptly terminating flange. Internal ligamental prominence projecting only slightly. Anterior portion of internal condyle narrow relative to its length.

Cryptociconia indica, sp. nov.

Etymology. The specific name refers to the country of origin.

Diagnosis. The only known species of its genus. Characters those of genus.

Material. An incomplete distal end of a tibiotarsus, B.M. (N.H.) no. 48444, presented by Charles Falconer in 1868 (fig. 4).

Occurrence. Siwalik Series, Lower Pliocene; Siwalik Hills, Uttar Pradesh, India.

Description. The holotype is a distal end of a left tibiotarsus, the shaft broken off just proximal to the supratendinal bridge anteriorly; and to the condylar groove posteriorly. The external condyle is extensively broken anteriorly and posteriorly. Except for the narrowness of the anterior part of the internal condyle the specimen shows a general similarity to the corresponding parts of Recent *Ciconia* species in shape, but is considerably larger. Viewed laterally, the internal condyle is rounded anteriorly, with a very slight posterior slant, but posterior to this tapers towards the proximal posterior end of the intercondylar groove where it forms a prominent flange terminating as an abrupt posterior projection. Anteriorly the smaller features are damaged or eroded, but there is evidence of a laterally broad, medially

placed tubercle on the supratendinal bridge, the latter having a marked disto-anterior slant. In length relative to width the anterior part of the internal condyle is more similar to that of *L. siwalicensis* than those of the Recent smaller storks which it otherwise resembles. In general size it would seem to have been only slightly smaller than the large Recent Marabou, *L. dubia.*

Measurements. Greatest length of specimen 28·7; greatest distal width 20·7; anterior/posterior thickness at internal condyle 30·3; posterior proximal projecting flange 5·2; anterior length of internal condyle 17·8; thickness (measured on outer side to condylar lip) 9·0; anterior/posterior thickness at intercondylar groove 18·7; width of supratendinal bridge 7·6 mm.

SUMMARY

Various Pliocene and Miocene fossil specimens have been referred to the extinct marabou stork, *Leptoptilos falconeri.* A re-examination reveals that several species are involved. The distal end of the tibiotarsus, available for all these species and often used as a holotype for extinct stork species, does not show useful characters for separation in the present species although such characters are present on other bones. It is suggested that the apparent uniformity of a skeletal element such as this in birds in which other parts differed might give rise to assumptions that Recent species existed at much earlier periods when in fact morphologically distinct forms were involved.

Of eight Pliocene specimens originally referred to *L. falconeri,* five are here considered referable to a very large species under this name; two to *L. siwalicensis* (*sp. nov.*), a species of similar size to the Recent *L. dubius*; and one to *Cryptociconia indica* (*gen. et sp. nov.*), an unrelated stork of similar size to the last. The two Miocene specimens assigned by Rich to *L. falconeri* appear to constitute another species, *L. richae* (*sp. nov.*).

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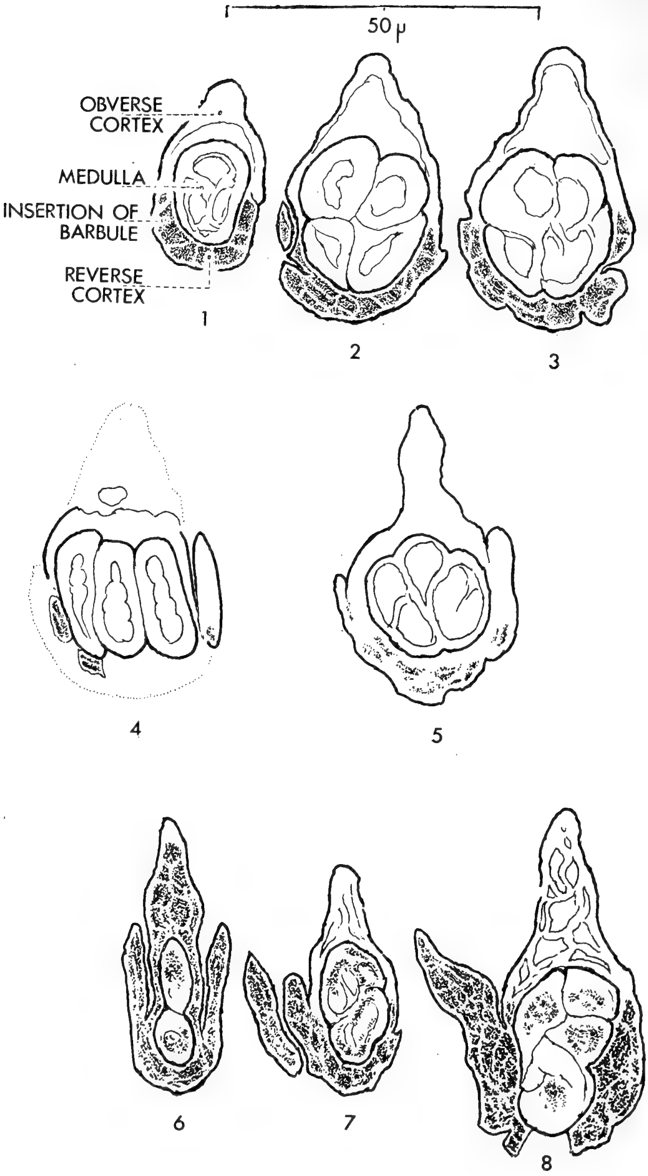
The structure of feathers in *Chlorophanes purpurascens*

by L. Auber

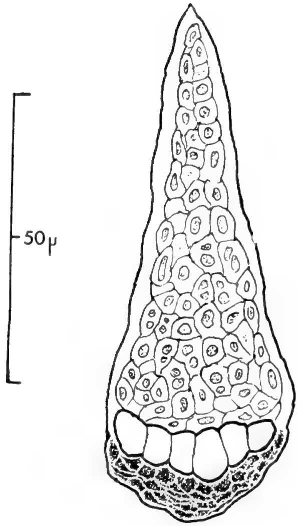
Received 12th January, 1974

INTRODUCTION

The Trustees of the British Museum (Natural History) have been kind enough to place at my disposal three contour feathers, each from a different region of the plumage (chest, rump and crown), of the unique specimen of *Chlorophanes purpurascens* Sclater & Salvin (1873, *Nomen. Av. Neotrop.:* 157. Venezuela), redescribed and illustrated by Sclater (1886: 31 and pl. iv). This specimen has also been considered by Hellmayr (1935: 250). It is referred to hereafter simply as "the holotype".



Figures from transverse sections through barbs from *Chlorophanes purpurascens*:—1–4, in a termino-basal succession from a chest feather (fig. 4 is a fragment of a section, showing horizontal arrangement of medullary cells); 5, through extreme base in vane of a rump feather; 6–8, in a termino-basal succession through terminal vane half of a crown feather.



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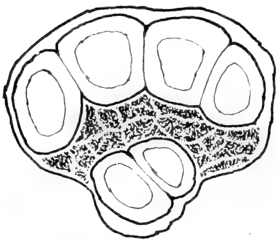

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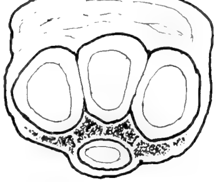

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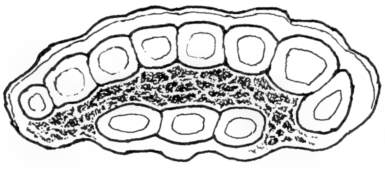

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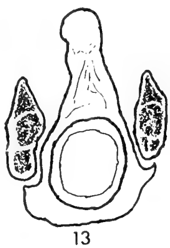

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Figures from transverse sections through broadest part of barb, all except 13 of a chest feather:—9, *Chlorophanes spiza* ♂; 10, *Dacnis cayana* ♂; 11, *D. cayana* ♀; 12, *Cyanerpes cyaneus* ♂ (from Auber 1957: fig. 8b); 13, *C. cyaneus* ♀ (of feather of interscapular region).

Bond (in Phelps & Phelps 1948: 202–203) and Wetmore (in Storer 1957: 507) ascribe a hybrid origin to the holotype. They agree about one parent species, *Chlorophanes spiza* (the genus *Chlorophanes* being monotypic, if *C. purpurascens* is not a distinct species), but disagree about the other one, Bond believing it to be *Dacnis cayana*, Wetmore *Cyanerpes cyaneus*. Storer (*op. cit.*) is inclined to agree with Wetmore, but does not entirely exclude the possibility of it representing a valid species. All these putative parent species are placed by Storer (1970: 391) in the subfamily Thraupinae of the family Emberizidae.

On account of the great value of the material made available to me, for many years I postponed sectioning the three feathers until I was sure that I had a microtome knife of sufficient sharpness. Even so, the feathers from so old a skin tended to splinter. Nevertheless they yielded the details described below. Considering the probable hybrid origin of the holotype, detailed discussion is necessary of the feather characters of the possible parent species.

INTACT SKIN AND FEATHERS

From my examination of the holotype as a whole, the purplish blue regions of the plumage show a faint indication of an enamel effect, but no trace of the glassy glitter peculiar to *C. spiza*. Under microscopical examination in reflected light, of the intact blue barbs of the three feathers available, the reverse surfaces all show a black longitudinal zone. In transmitted light the same barbs show, outside a black opaque zone, one that transmits yellowish light (the medulla, see fig 1), and adjacent to this a transparent colourless zone belonging to the cortex. Evidently the blue colour of these feathers is due to the optical phenomenon that causes most instances of non-iridescent blue, green and purple in feathers. After mistakes by previous physicists, this optical effect has been recognised by Dyck (1971) as a special instance of interference of light, and is not a Tyndall effect.

TRANSVERSE SECTIONS THROUGH BARBS (figs. 1–8)

When stained according to the routine method of Auber (1955), the medullae did not attain the typical acid stain with picro-Indigocarmine, but a pale orange stain due to an apparently not very strong affinity with both Basic Fuchsin and picric acid. Owing to the restricted amount of material, it is not possible to explain this unusual staining reaction.

Cortex: The obverse cortex (figs. 1–3) is rather massive and laterally compressed into an approximately prismatic shape with a fairly blunt summit. In routine-stained sections it appears practically homogeneous, except that the marginal portions (corresponding to surface cells) have less affinity with Basic Fuchsin than have the portions inside the prism. The reverse cortex has an intense melanisation which extends laterally up to the likewise melanised barbules. Towards the concealed vane portions (fig. 5) of the feathers of the chest and rump, the obverse cortex is further compressed into a narrow ridge, so that the outline is pear-shaped. Melanisation in the reverse and lateral cortex is reduced.

Medulla: On the chest and rump, near the attenuated barb tip (fig. 1), the medulla has a vertically oval outline. Around the widest portion of the barb (figs. 2–3) the outline is almost circular, the cells having almost a radial arrangement. Occasionally, as in the fragment (fig. 4), the cells form a horizontal series. However, this arrangement has been found only near the vane base, although apparently still in the exposed feather portion. Throughout the medulla (figs. 2–4) the cell-boundaries are fairly straight. Each cell

contains a cavity of a rather irregular shape, often with rounded ("ameboid") diverticles. Their rounded outlines indicate that these shapes are not artefacts. More jagged outlines would result, if the cell walls splintered during sectioning. In the chest and rump feathers the medulla is altogether amelanotic. In the blue terminal half of the crown feathers (figs. 6–8) nearly every cell of the laterally compressed medulla contains small black granules of rodlet-shape, irregularly distributed in varying amounts.

DISCUSSION

Hellmayr (1935: 250) considered the holotype to be a male. This conclusion is apparently based on the chiefly blue shade of the plumage. In most coerebothraupines the males are mainly blue, the females mainly green (due to yellow filter pigment being superimposed on the structural blue). Bond's opinion (in Phelps & Phelps 1948) that the holotype is a hybrid between *Chlorophanes spiza* and *Dacnis cayana* is based on:—(1) the overall similarity in shape with *C. spiza;* (2) the similarity in main colour-pattern with *D. cayana* (♂); and (3) that it is partly sympatric with these two species. Storer (1957) believes that Wetmore, whom he quotes, is more correct in assuming that the parent species are *Chlorophanes spiza* and *Cyanerpes cyaneus* (not *D. cayana*). The following reasons are given:—(1) there is a greater similarity in the colour-pattern between the holotype and *Cyanerpes cyaneus* (♂), and likewise in the dark purplish main colour (light blue in *D. cayana* ♂); (2) the bill of the holotype, quite similar to that of *Chlorophanes spiza*, is more similar to that of *Cyanerpes* than to that of *Dacnis*. At all events, the sympatric argument made by Bond applies also to *Cyanerpes cyaneus*.

Feather structure: Individual feather characters in the holotype (figs. 1–8) are dealt with under (a) – (f) below. Items (a) and (b), and to some extent (c), indicate affinity with *Chlorophanes spiza*, but none of them indicate any special affinity with either *Dacnis* or *Cyanerpes*. These items may now be detailed:—

(a) *Prismatic obverse cortex:* Approaches the conditions in *Chlorophanes spiza* ♂ (cf. fig. 9), but is much lower and lacks the extreme sharpness of its summit (height and sharpness of summit, together with absence of barbules from exposed feather portions, causing glitter in *C. spiza* ♂). Neither does the prism in the holotype contain the complex light-scattering apparatus described by Auber & Appleyard (1955: 255–256) which in the *C. spiza* ♂ imparts a green shade to the structural blue. This atypical cause of the green is an alternative to the usual cause, viz. superposition of yellow filter pigment on blue-producing structures: see below under females. In this context male skins in the Naturhistorisches Museum, Vienna, mislabelled '*Chlorophanes purpurascens*', without further data (cf. Auber & Appleyard 1955) are in reality *C. spiza* with a strong bluish tinge to the green. According to a recent inquiry these specimens were collected near Quito, and so can be determined as *C. s. caerulescens* (cf. Sclater 1886: 30). The bluish tinge of these specimens, as compared with the intense green of eastern *C. spiza* ♂♂, can be attributed to a less efficient light-scattering apparatus in the prism. In *Dacnis cayana* ♂ (fig. 10) and the much more highly specialised *Cyanerpes cyaneus* ♂ (fig. 12) the obverse cortex forms a very thin lamina.

(b) *Melanisation of reverse cortex* (configuration [Ba] in Auber 1957: 462): Agrees with the condition in both sexes of *Chlorophanes spiza* (fig. 9) except that:—(1) in the holotype the melanisation extends into well developed barbules (such being absent from the exposed green vane portions in *C. spiza* ♂, whereas corresponding portions in *C. spiza* ♀ bear amelanotic barbules); (2) melanisation at the barb bases is rarefied (fig. 5), whereas in

C. spiza fairly intense melanisation of the reverse cortex coexists with melanisation in the extreme obverse (Auber 1957: fig. 15d). In both sexes of *Dacnis* (figs. 10, 11) and in *Cyanerpes* ♂ (fig. 12) melanisation is contained in a cortical partition (configuration [Bc] in Auber 1957: 462).

(c) *Irregular melanisation of medullary cells in crown feathers* (figs. 6–8): The first impression given by this character is of an extreme instance of an otherwise sporadic occurrence in typically amelanotic medullary cells of various bird forms. The crown feather of the holotype is not melanised to such an extent that it appears entirely black *in situ* (as do corresponding feathers in *Chlorophanes spiza* ♂). However, it approaches the condition in the head region of this species and sex, contrary to that in the chest and rump feathers of the holotype and in any blue feather from *Dacnis* and *Cyanerpes* ♂♂, none of which show any black *in situ*.

(d) *Pear-shape of sections* (fig. 4) through barb bases is a generalised feature, indicated in at least the vane base of most feather types (Auber 1957: 460–461).

(e) *Medulla of oval or circular outline* (figs. 1–3, 5): Again a generalised character. It is absent from exposed barb portions in structurally coloured feathers from both sexes of *Chlorophanes spiza* (fig. 9), of *Dacnis* (figs. 10, 11) and from *Cyanerpes* ♂ (fig. 12): in all these instances the medullary cells form horizontal tiers. Thus in the holotype the apparently occasional horizontal arrangement (fig. 4) of medullary cells is not significant in the present context.

(f) *Irregular (partly "ameboid") shape of medullary cell cavities:* As far as could be seen, peculiar to the holotype. It contrasts with an entire absence of medullary cavities from exposed barb portions in structurally coloured feathers of *Chlorophanes spiza* (fig. 9), as well as with the condition in *Dacnis* and *Cyanerpes* (figs. 10–13), in which these barb portions contain medullary cells with cavities of regular "polyhedral" shape (cf. Auber 1973). Absence of cavities from medullary cells in *Chlorophanes spiza* appears to be unique (cf. Auber & Appleyard 1955: 253, 255). Polyhedral cavities, on the other hand, are frequent in Passeres, but they also occur in some non-passerine families.

Females: In those of all three possible parent species the plumages are chiefly green, viz.:—(1) in a typical fashion, yellow filter pigment in the transparent obverse cortex is superposed on the blue-producing structure (cf. Kniesche 1914); (2) often also, green barbs differ from corresponding blue barbs by a more massive obverse cortex (Frank 1939: 501–502), to produce a more efficient filter. Character (2) applies to the bright green in *Dacnis* (cf. fig. 10 with fig. 11), in which form the blue and green barbs of males and females, respectively, otherwise show the same level of specialisation. This character also applies to the dull green in *Cyanerpes* ♀. In this form, however, the ♂ (fig. 12) is much more highly specialised than are both sexes of *Dacnis*. The *Cyanerpes* ♀ (fig. 13), on the other hand, shows structurally some generalised details (sections through barbs pear-shaped and melanisation confined to barbules, cf. configuration (C) in Auber 1957: 462). In females of the extremely highly specialised *Chlorophanes spiza* only character (1) obtains: the obverse cortex forms a massive prism in both sexes.

SUMMARY

Recent authors interpret the unique specimen originally described as *Chlorophanes purpurascens* as a hybrid between two coerebo-thraupine species, either *Chlorophanes spiza* and *Dacnis cayana* or *C. spiza* and *Cyanerpes cyaneus*. Examination of structurally coloured feathers from *C. purpurascens* shows

that they agree in certain respects with those of *C. spiza* but do not show the extreme degree of specialisation found in that species. Along their barbs they show considerable fluctuation, in details of structure and melanisation. On the other hand, no details could be found pointing towards the structures in the feathers of the other species suggested as a parent, either *Dacnis cayana* or *Cyanerpes cyaneus*.

ACKNOWLEDGEMENTS

My thanks are due to the Royal Scottish Museum for facilities for research; to the Trustees of the British Museum (Natural History) and Mr. I. C. J. Galbraith for the unique material; to Mr. Galbraith also, and Dr. A. S. Clarke, Mr. I. H. J. Lyster, Mr. J. M. Sanderson and Mr. A. R. Waterston for constructive criticism; to Dr. G. von Rokitansky and Prof. R. W. Storer for valuable information; to Mr. C. W. Benson for assistance in presentation of this paper; to the Royal Society for a research grant; and to the Editor, Journal of Zoology, for permission to reproduce the present fig. 12.

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The type of the Madagascar Cuckoo *Cuculus poliocephalus rochii* Hartlaub

by C. W. Benson

Received 25th February, 1974

Benson *et al.* (1970: 17) considered that a female of this cuckoo in the University Museum of Zoology, Cambridge, collected at Chasmanna, Madagascar, on 2nd October 1862, could not be the type, even although it had been indicated as such by Prof. A. Newton. This was because Hartlaub's description (1862: 224) was ostensibly published on 11 November 1862, only 40 days after the date of collection. However, Duncan (1937: 72) gives the true date of publication as April 1863. Thus there was a lapse, not of a mere 40 days, but of some six months, so that even in those more leisurely times completion of the process from collection to publication of a description would have been possible.

What must be the specimen in question is referred to by E. Newton (1863: 453). He states that it would soon have bred, while according to the label it had "eggs large". Roch & Newton (1863: 166) refer to a specimen which might be supposed to have been collected in September or October 1861 (*ibid.*, 1862: 265–266). No such specimen has been found in either Cambridge or Bremen, where there are many of Hartlaub's types (Benson *et al.* 1970: 17). Reference to the *Ibis* for 1863 shows that the second part of Roch & Newton's paper was published in April of that year. The note on *Cuculus rochii* (p. 166) contains a reference to Hartlaub (1862), presumably a last minute insertion, with the "One obtained" referring to the specimen available to Hartlaub.

The matter has been discussed with R. Wagstaffe, who agrees that the Chasmanna specimen may be properly regarded as the holotype, *contra* also Benson (1971: 4), who does list several other Hartlaub Malagasy types in Cambridge. Incidentally, Benson *et al.* (1970: 17) suggest that the type of *rochii* was collected somewhere between Tamatave and Tananarive. Chasmanna has not been traced from any map or gazetter, either modern or from the last century. However, from the account of his travels during his second visit to Madagascar (E. Newton 1863: 333–335), Chasmanna cannot have been far upstream from the mouth of the Hivondrona (now Ivondro) River, just to the south of Tamatave. For practical purposes the type locality may be taken to be Tamatave.

I gladly absolve my co-authors in Benson *et al.* (1970) from responsibility for any previous error, more particularly the overlooking of the paper by Duncan (1937).

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The Pintail *Anas acuta* in Rhodesia

by Michael P. Stuart Irwin

Received 1st March, 1974

The holarctic Pintail, *Anas acuta* Linnaeus, winters extensively in northern tropical Africa (Moreau 1972: 220), although it has been collected once as far south as Zambia at Ndola at 13° S., in February (Benson *et al.* 1971: 55). Within the South African sub-region the only evidence of its occurrence is provided by Took (1959: 84) who observed a pair near Salisbury in November 1958.

On 3rd February 1974 Mr. Eugene Halsted, while on a shooting party, obtained two female Pintails from a flock of five on a farm dam at Portwe Estate, 19°40′S., 28°42′E., near Turk Mine. Both carried extensive body fat and weighed 822·5 and 852·7 grammes respectively. During the following week a flock of six were reported from the same locality, by Mr. Huntsman Williams who had seen the original group of five and had become familiar with the species. Garganey *Anas querquedula* Linnaeus were also reported as

having been shot at the same time as the Pintail, but no specimens were preserved.

It is therefore possible that an influx of these palaearctic duck may have occurred. Exceptionally heavy rains have characterised the 1973/74 rainy season in Rhodesia and over most of south-central Africa. This factor, accompanied by the progressive series of droughts in the northern semi-arid savanna belt of Africa (Winstanley 1973: 190–194), may well force many birds south of their present normal wintering area. That Pintail, at least during the cooler periods of the Pleistocene, must have occurred very much further south than they do to-day, is evidenced by the existence of isolated resident, subspecifically distinct, sub-antarctic populations found on Kerguelen and the Crozet Islands (Delacour 1956: 132–135).

My sincere thanks are due to Mr. Eugene Halsted for reporting the presence of these ducks, and to Mr. Robert Halsted for bringing this material into the National Museum, Bulawayo, for identification.

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[R. J. Dowsett (*in litt.*) reports the following records of palaearctic Anatidae from Zambia in the 1973–74 rains:—Pintail: Kitwe, one 26 Dec. to 3 Jan. (B. Coates, Dr. E. H. Penry); Mufulira, one 8 to 13 Jan. (T. Sims, G. P. Robinson). European Shoveler *Anas clypeata:* Kitwe, four 25 Dec., three 27 Dec. and 1 Jan., one 17 Jan. (Coates, Penry). Garganey *Anas querquedula:* Recorded from Mufulira, Kitwe, Blue Lagoon and Lochinvar, first at Mufulira 30 Nov. Maximum numbers (the largest yet recorded from Zambia) were at Lochinvar in Mar., when 100+ were counted (T. O. Osborne, R. Stjernstedt).—Ed.]

Larus minutus in Angola

by J. C. Sinclair

Received 10th December, 1973

A very small gull was sighted flying overhead in Lobito harbour, Angola, *ca.* 12°S., on 6 May 1973. The bird was seen again a few minutes later, when sufficiently adequate views were obtained to identify it as a Little Gull *Larus minutus* Pallas, and the following description was noted:—*Upperparts:* forehead and front of crown white; rest of crown, nape, mantle and wings grey; leading edges of primaries black, likewise edges of secondary coverts which formed a conspicuous W on upper-wings; square-ended tail white narrowly tipped black. *Underparts:*—mainly white with pale underwings.

The bird was in company with Black Terns *Chlidonias nigra*, and was noticeably larger. The flight was bouyant and tern-like, on wings which had a rounded appearance at the tip. The bill was short, stubby and dark in colour. No black spot behind the eye was apparent.

This record appears to be the first for the Little Gull south of the Canary Islands (Watson 1965, *Seabirds of the tropical Atlantic Ocean*), and the species is not mentioned by White (1965, *A revised check-list of African non-passerine birds*).

[The above note has been read by R. Wagstaffe. With long experience of palearctic gulls, he considers the record authentic.—Ed.]

Fish offal scavengers off Luanda

by J. C. Sinclair

Received 10th December, 1973

Brooke (1971, *Bull. Brit. Orn. Cl.* 91: 46) records Little Egrets *Egretta garzetta* and Grey Herons *Ardea cinerea* scavenging inside the harbour at Luanda, Angola. On 10 and 11 May 1973 dawn sea-watches were carried out at the northern tip of the "island" just off Luanda. The "island" runs parallel to the coast and forms the outer bar of the bay, the northern tip being at the bay entrance. During the course of the morning many small fishing craft entered the bay, gutting fish and throwing the offal overboard. Groups of *ca.* 500 Little Egrets and *ca.* 140 Grey Herons were assembled on the sandy point not far from the *Casuarina* trees where they breed and on sighting a boat offshore would fly out to meet it and follow it into the bay entrance picking up, in the manner described by Brooke (*op. cit.*), pieces of offal discarded by the boats. The Little Egrets were noticeably more adept at foraging than the ponderous Grey Herons. They would even take fish out of unattended baskets when the boats had been berthed. Some boats were joined by the herons and egrets at a distance of up to a mile offshore. A Grey Heron was seen to plunge and settle on the water to peck at a large piece of offal and had no great difficulty flying up and pursuing the boat again. Other species seen following the boats were one immature black-backed gull either *Larus fuscus* or *dominicanus*, Arctic Skuas *Stercorarius parasiticus* (one skua made an attempt to harry a Little Egret but with little success), Royal Terns *Thalasseus maximus*, Black Terns *Chlidonias nigra* and a Palm-nut vulture *Gypohierax angolensis*. The last named, although it did not directly follow the boats, did pick a fish from the water surface in its talons.

I am obliged to R. K. Brooke for commenting on a draft of this note.

Vocal mimesis in nestling Greater Honey-guides

by C. H. Fry

Received 17th December, 1973

In February and March 1973 I studied the social organisation of Red-throated Bee-eaters *Merops bulocki* in breeding colonies at Zaria, 11°08′N, 7°47′E, northern Nigeria. Using an industrial endoscope (fibroxscope) with portable 6v light source, I was able to make regular observations not only of young bee-eaters *in situ* in their nests at the end of 1 m long tunnels, but also of young Greater Honey-guides *Indicator indicator* that the bee-eaters fostered.

African honey-guides parasitise a wide variety of hole-nesting birds, with some preference by *Indicator minor* and *I. variegatus* for other piciform species, particularly barbets (Friedmann 1955, *Proc. U.S. Nat. Mus.* 108: 309). Although *I. indicator* often parasitises barbets and woodpeckers, a much greater number of records involve coraciiform hosts, particularly six or more *Merops* species which constitute about one third of the known cases (Friedmann 1970, *Los Angeles Co. Mus. Contrib. Sci.* 205: 1). Most tropical bee-eaters lay 2–4 eggs; many of these are destroyed by the female honey-guide, and young bee-eaters hatching from unbroken or subsequently laid eggs are, in most cases, destroyed by the newly-hatched honey-guide, which usually comes to occupy the nest alone.

Nestling *M. bulocki* have a loud and insistent food-soliciting call "*sif-sif-sif-sif* . . .", about five syllables per second. At least until their eyes begin to open

at about eight days, it is easily elicited by a variety of stimuli, with the intensity of which its loudness and frequency are positively correlated. Using the endoscope for visual corroboration, I found it easy to distinguish by ear a nestling calling alone from more than one nestling calling simultaneously, but very difficult to distinguish two from three or more.

The begging call of the nestling *I. indicator* is a loud and insistent, irregularly-timed series of "*sifs*", 5–10 syllables per second. It is delivered with the head sunk into the shoulders and the beak held vertically upwards. Skead (1951, *Auk* 68: 52) described the call as "husky and perpetual". He likened it to the guiding call of the adult *I. indicator* and noted that it can be heard, greatly accelerated and intensified, 75 yards from the nest whenever a foster parent approaches with food. To my ear the voice was not so much husky as sibilant, and extremely similar to the voice of nestling *M. bulocki*. However, the food-soliciting call of the nestling *I. indicator* resembles not one but *two* (or more) *M. bulocki* nestlings calling simultaneously.

Vocal convergence between parasite and host nestlings is not unexpected, in view of the diversity of mimetic resemblances that has evolved between brood parasites and their hosts at all growth stages (Lack 1968, *Ecological adaptations for breeding in birds*). Indeed such convergence has been suggested for some cuckoos (Courtney 1967, *Emu* 67: 154–157). But the call of a nestling *I. indicator* is likely to evoke the feeding response in an adult bee-eater more powerfully than the call of a single bee-eater nestling. If so, it would confer the selective advantage that the parasite would compete effectively for the attention of provisioning adults with neighbouring nests in the colony, however many nestlings they contain. In this and other colonial species of *Merops*, young in the nest are fed not only by their parents but by adult non-breeding helpers whose bonds with the parents are not strong enough to ensure their complete fidelity to their adopted nest (Fry 1972, *Ibis* 114: 1). Even were there no helpers, the honey-guide call is probably a super-normal stimulus that elicits the feeding response of any passing adult bee-eater, just as the begging call and wide, brightly coloured gape of the young Cuckoo *Cuculus canorus* does with adult passerines. Observations at one parasitised nest on 16 March suggested that during a three hour period at least four adult bee-eaters fed the 15-day old honey-guide chick.

At least up to two weeks of age, *I. indicator* nestlings were found to be extremely voracious; in the nest they tried to engulf the 10 mm diameter tip of the endosope, and when handled one bird attempted to swallow a finger. Why provisioning bee-eaters are not harmed by the nestling's needle sharp mandibular hooks is not at all apparent.

I am most grateful to Dr. H. Friedmann and Dr. J. B. Nelson for their comments upon an earlier draft of this paper.

Buteo tachardus Andrew Smith 1830

by R. K. Brooke

Received 21st November, 1973

Roberts (1940), Courtenay-Latimer (1941) and Clancey (1951) showed that South Africa had a small resident *Buteo* as well as the well known large *B. rufofuscus* (Forster) 1798. These authors associated it with *B. oreophilus* Hartert & Neumann 1914 with type locality Koricha in Ethiopia. Rudebeck (1957) demonstrated that the small South African *Buteo* was not the same as the northeast African *B. oreophilus* and proposed for it the name *Buteo buteo*

trizonatus with type locality Knysna in the southern Cape Province of South Africa. He described it as smaller and duller than *B. b. vulpinus* (Gloger) 1833 and with clear white between the brown streaky markings of the breast and lower abdomen. However, although he was unaware of it, he was not the first author to describe and name this bird. This was done by Smith (1830: 381) who in discussing the *Buteo* species of what is now the Cape Province listed *B. lagopus* by which he meant what we know as *Hieraaetus pennatus* (Gmelin) 1788 (Roberts 1936 thought so and I concur), *B. tachardus* by which he meant what we have known as *B. b. trizonatus* Rudebeck 1957 and *B. desertorum* (Daudin) 1800 which is an indeterminable name normally applied in the past, as here, to what we know as *B. b. vulpinus* (Gloger) 1833.

Smith (1830), as many others have done, found *Buteo* specimens confusing. Nonetheless, he drew attention to and named a small form ($18\frac{1}{4}$ ins. long, i.e. just over 460 mm) with a clear white upper abdomen between the brown streaked and blotched breast and lower abdomen. The significant part of his description reads:—

> "under parts white, with the throat streaked by narrow longitudinal brown lines, and the breast and *posterior* (my italics) part of the belly more or less spotted with oblong or roundish brown blotches".

The description is repeated with slightly different wording and punctuation in Smith (1834). He believed that he was dealing with Le Vaillant's (1799) Le Tachard and *Falco tachardus* Daudin 1800, both of which are synonyms of *Pernis apivorus* (L.) 1758 (Hartert 1914). What Smith (1830) thought he was doing is of little importance in comparison with what he did do, i.e. describe a taxon in *Buteo* which subsequent study has shown to be valid: cf. Vaurie (1951) on the validation of *Hirundo lagopoda* Pallas 1811 where the latter also confused the issue with irrelevant citations. Two of Smith's specimens of *B. tachardus* were examined in the British Museum (Natural History) by Rudebeck (1958) who placed them with his *trizonatus* so there can be no doubt that the form was known to Smith.

I conclude that *Buteo tachardus* Smith 1830 is an unequivocal description of what Rudebeck (1957, 1958) clarified under the name *B. b. trizonatus* and that since Smith's name has undisputable priority and does not fall within the conserving terms of Articles 23 and 79 of the International Code of Zoological Nomenclature as set out in *Bull. Zool. Nomencl.* 29: 185–186, it must be used by any zoologist who believes that the small South African *Buteo* is an objective taxon.

Rudebeck (1957) gave the type locality of his *trizonatus* as Knysna, Cape Province, South Africa. Since by 1830 Smith had not worked outside what is now the Cape Province (Roberts 1936), Knysna can be regarded as the restricted type locality of *B. tachardus*. Smith's surviving specimens of this form are labelled only as coming from South Africa (Rudebeck 1958) but there is no reason why they should not have been obtained at or near Knysna. If a lectotype is required, one of these specimens should be chosen.

Following Siegfried (1971) I regard *B. tachardus* Smith 1830 and *B. oreophilus* Hartert & Neumann 1914 as conspecific and not part of *B. buteo* (L.) 1758. The new nomenclatural combinations required are, therefore, *Buteo tachardus tachardus* and *Buteo tachardus oreophilus* with *Buteo buteo trizonatus* as a subjective synonym of *B. t. tachardus*. For check list purposes the name should appear as:—

Buteo tachardus tachardus Smith

Buteo tachardus Smith, 1830, *S. Afr. Quart. Journ.* 4: 381. South Africa,

restricted to Knysna, Cape Province, South Africa by Rudebeck (1957, *S. Afr. Anim. Life* 4: 418).

I have examined the type of *B. b. trizonatus* Rudebeck and all the specimens in South African museums that he placed with it (Table 1) and concur in his comments (Rudebeck 1957, 1958) as far as they go. I have not found any other specimens which should be referred to this form. A study of the moult of the primaries on the lines of Brooke *et al.* (1972) has elucidated certain

TABLE 1

Measurements in mm of *Buteo t. tachardus* specimens.

Age	*Sex*	*Wing*	*Culmen*	*Hind claw*	*Museum and no.*
ad.	♂	340	21	19	T.M.P. 6278 Type
ad.	♂	340	21	19	„ 24273
ad.	♀	345	23	22	E.L.M. 578
ad.	♀	350	23	23	N.M.PMB —
ad.	o ♂?	350	21	20	T.M.P. 61
ad.	o ♂?	335	21	19	A.M.G. 968
imm.	o ♂?	330	21	21	T.M.P. 6281
imm.	♀	350	21	22	„ 6280
imm.	o ♀?	365	23	21	„ 62
imm.	o ♀?	350	22	23	„ 6279
juv.	♀ ♂?	335	20	19	„ 5450
juv.	o ♀?	340	22	—	„ 5006

aspects of plumage succession. On the apparently well founded assumption that juveniles (first year birds) show no moult of the primaries, immatures (second year birds) show a simple descending mode of moult and adults a jumbled mode of moult (see also Stresemann & Stresemann 1966 on *B. b. buteo*) it can be stated that the juvenile and immature plumages of *B. t. tachardus* are characterized by leg feathers which are white with a few brown spots or blotches (this is not individual variation as believed by Smith 1830) whereas in adults and in all age classes of *B. b. vulpinus* the legs are predominantly dark brown of some shade. In addition, the darkest specimens of *tachardus* are all adults but the sample I have seen (Table 1) is too small to say if this is always true in a member of a genus as notoriously variable as *Buteo* is.

Although Siegfried (1971) accepted the sight record of *B. t. tachardus* in the northern Potgietersrus District of the Transvaal (not far from The Downs) by van der Merwe & Pienaar (1959), I do not. The latter authors give no details in support of their record of an apparent rarity; they do not record the much more probable *B. b. vulpinus* despite visiting the area in summer (judging by the number of summer visitors they list: they do not give the dates of their visits); they record for the area a number of species which are not known from anywhere near Potgietersrus, e.g. *Turdoides leucopygius*, *Laniotardus torquatus*, *Onychognathus nabouroup*, again without comment.

I am obliged to Mr. C. Jacot-Guillarmod of the Albany Museum in Grahamstown, Dr. A. C. Kemp of the Transvaal Museum in Pretoria, Dr. J. A. Pringle of the Natal Museum in Pietermaritzburg and Mr. C. Quickelberge of the East London Museum for facilities for study and to Mr. P. A. Clancey for commenting on a draft of this paper.

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The African southern limits of the Steppe Eagle in winter

by R. K. Brooke

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Brooke, Grobler, Irwin & Steyn (1972, *Occ. Pap. Nat. Mus. Rhod.* B5: 61–114) set out the known records of the Steppe Eagle *Aquila nipalensis orientalis* in southern Africa in detail and predicted that, at least at times, it should extend south into the Karoo of the Cape Province of South Africa since its predominant prey, alates of the Harvester Termite *Hodotermes mossambicus*, are abundant there. This proves to be the case. The East London Museum has a specimen received from J. Pete, a farmer in the Tarkastad District of the Cape Province, who used to trap birds for his aviaries and pass on to the museum those that died. Hence the date of death of this specimen, 15 June 1942, has nothing to do with its time of occurrence near Tarkastad other than to provide a *terminus post quem*. The specimen is a very dark fourth year male on the characters set out in Brooke *et al.* (*op. cit.*) with wing 585, culmen from cere 41, hind claw 32 mm. It may be assumed that it was trapped on or close to Pete's farm, i.e. *ca.* 32°10'S, 26°00'E, as were his other birds (Dr. M. Courtenay Latimer pers. comm.).

Clancey (1951, *Ann. Natal Mus.* 12: 137–151) reported a specimen of *A. n. orientalis* from Himeville, Natal at 29°45'S, 29°31'E. Upon examination of the specimen in the Natal Museum, Pietermaritzburg, I find it to be a first year male with wing 575, culmen from cere 36, hind claw 32 mm.

I am obliged to Dr. M. Courtenay-Latimer, Director of the East London Museum, and to Dr. J. A. Pringle, Director of the Natal Museum, for facilities for study.

A further record of the White-eyed Gull *Larus leucophthalmus* from Beira, Moçambique

by B. G. Donnelly

Received 19th January, 1974

On 12 March 1972, a small gull fitting the description of a second winter or non-nuptial plumaged White-eyed Gull *Larus leucophthalmus* (see Dwight 1925, *Bull. Amer. Mus. Nat. Hist.* 52: 152) was observed at the fishing

harbour at Beira. The bird was feeding with numerous Grey-headed Gulls *L. cirrocephalus*, and a single Lesser Black-backed Gull *Larus fuscus*. In flight the bird was more agile than *L. cirrocephalus* and slightly smaller in size as mentioned by Liversidge (1964, *Ostrich* 35: 111–112). The overall plumage colour was buffish-white while the tail had a sub-terminal band of dark spots. The head was greyish with an imperfectly formed black hood. The bill, legs and feet were yellowish-brown. The dark primaries and secondaries formed a conspicuous terminal band on the wings.

The only other sightings of this species from southern Africa were made at Beira (Benson 1948, *Ostrich* 19: 150–151) and Port Elizabeth (Liversidge *op. cit.*), both during the month of January. These and the present record suggest that individuals of this species may only move this far south of their usual range around the Red Sea and Gulf of Aden (Archer & Godman 1937, *Birds of British Somaliland and the Gulf of Aden* 2) during December to March. Incidentally, Liversidge was dubious about Benson's record, but Benson (pers. comm., 25 July 1973) states that the bird which he saw was most carefully identified with the aid of Alexander (1928, *Birds of the Ocean*. London: Putnam).

The Lesser Black-backed Gull *Larus fuscus* in southern and central Africa

by B. G. Donnelly

Received 19th January, 1974

Only recently has the occurrence of *Larus fuscus* in southern Africa been generally accepted (McLachlan & Liversidge 1970), while data on this species from central Africa are scarce. This communication brings together the published data and several new observations, and discusses birds previously identified as *L. dominicanus*.

Larus fuscus breeds in Iceland, the Faeroes, along the coasts of the British Isles, Scandinavia, Finland and the Baltic and winters on the west coast of Africa, the Mediterranean, Red Sea and the Gulf of Aden with some birds, *L. f. fuscus*, moving inland to the Great Lakes of East Africa (Archer & Godman 1937; Vaurie 1965). Moreau (1972) points out that *L. fuscus* is often abundant at times in East Africa and that they range as far south as Botswana around 18° S.

The closely related Southern Black-backed Gull *L. dominicanus* occurs around the coast of southern Africa from Angola to Lourenço Marques (McLachlan & Liversidge 1970), South America and outlying islands, likewise in New Zealand (Dwight 1925) and also in south-western Madagascar (Delacour 1932; Rand 1936; Milon 1948, 1950).

The two species are very similar in appearance. Measurements of wing, tail, tarsus and length of culmen *per se* are of little use in distinguishing them as there is a wide range of overlap (Dwight 1925; McLachlan & Liversidge 1970). However the bill and tarsus are more slender in *L. fuscus*, culmen more than three times depth at the base, while in *L. dominicanus* the culmen is less than three times the depth at the base (Dwight 1925: 126). This also applies to the depth at the angle of the lower mandible and is a useful field character. The yellow legs and feet of *L. fuscus* compared with the greenish-yellow or bluish-grey legs and feet of *L. dominicanus* is probably the most diagnostic field character. In adult birds the black mantle of *L. dominicanus* is similar to that of *L. fuscus* in the field. Birds with slate-grey or paler mantles could not

be confused with *L. dominicanus* as these would either belong to the British race *L. f. graellsii* or races from northern Europe or Eurasia. However, workers who are familiar with the heavier build and waddling gait of *L. dominicanus* of coastal South Africa would have little trouble in distinguishing the more slender *L. fuscus* in the field.

Recent observations show that *L. fuscus* occurs south of the Zambesi more frequently than previously realised and that individuals have been recorded near Durban at 30° S (Clancey *in litt.*). Several records of black-backed gulls from inland waters of South Africa have been attributed to *L. dominicanus* and these identifications were rightly questioned by Harwin (1952). Thus there has been some confusion in the past concerning the field characters of *L. fuscus* and *L. dominicanus* especially toward the southern edge of the range of the former in Africa. In the light of the data gathered in Tables 1 and 2 it is more likely that the gulls previously reported as *L. dominicanus* (Table 3)

TABLE 1
Larus fuscus: Collected material from southern and central Africa

Date	Plumage	Locality	Museum in which housed
Zambia			
19.9.59	imm.*	Kabeti	National Museums of Rhodesia, Bulawayo.
29.12.69	imm.	Lochinvar	National Museum of Zambia, Livingstone.
Caprivi Strip			
11.12.61	imm.	Lake Liambesi	National Museums of Rhodesia, Bulawayo.
Rhodesia			
14.10.70	imm.	Lake Kariba	National Museums of Rhodesia, Bulawayo.
South Africa			
28.12.53	imm.	Bon Accord Dam, Pretoria.	Transvaal Museum, Pretoria.

* moulting into adult plumage.

from far inland in South Africa (Joubert 1943; Prozeski & Campbell 1951; Harwin 1952) were in fact *L. fuscus*. Indeed both editions of *Roberts birds of South Africa* (McLachlan & Liversidge 1957, 1970) erroneously report a bird collected at Bon Accord Dam, Pretoria as *L. dominicanus*. Dr. A. C. Kemp of the Transvaal Museum, who examined the specimen at my request, reported (*in litt.*) that "the bird is, by comparison, certainly *Larus fuscus*, with markedly less heavy bill and smaller size."

The situation regarding the identification of black-backed gulls at Beira, Moçambique, has been equally confusing. Bolster (1933) and Moreau (1938) both record seeing *L. dominicanus* at this locality (Table 3). Winterbottom (1936) recorded black-backed gulls at Beira but stated that "I cannot pretend to be competent to differentiate between the two species in the field." Benson (1948) saw several gulls which "were either *L. dominicanus* Lichtenstein or a race of *L. fuscus* Linnaeus." Worth (1960) recorded several black-backed gulls at Beira harbour during July and August 1959. These were identified as *L. dominicanus* mainly on the grounds that "one would not expect these northern migrants (*L. fuscus*) in southern waters in July and August." Since *L. fuscus* has now been recorded from southern Africa virtually throughout the year (Tables 1 and 2) this latter statement does not apply. Clancey (1969) points out that *L. dominicanus* has been recorded as far north as Lourenço Marques

TABLE 2. Visual observations assessed as *Larus fuscus*

Date	No.	Plumage	Locality	Source
Malawi				
Feb.	—	—	Linthipe, Lake Malawi	Benson (1953)
Nov–Mar	"Not uncommon"	—	Lake Malawi	,, ,,
3.12.60	1	ad.	Lake Chilwa	Long (1962)
21.12.60	4[1]	—	,, ,,	,, ,,
21.10.59	1	imm.	Fort Johnston, Shire River	,, ,,
14.10.61	"Few"	—	Kota Kota, Lake Malawi	,, ,,
May 1960	4	—	,, ,, ,, ,,	,, ,,
Zambia				
Jan–Mar	—	—	Libonda and between Silonga and Lukulu, Zambesi River	White & Winterbottom (1949)
—	1	—	Itawa Swamp	,, ,,
23.7.65	1	ad.	Mfuwe, Luangwa River	Benson *et al.* (1970)
16.9.64	1	imm.	Lochinvar	R. J. Dowsett (*in litt.*)
13.3.72	2	ads.	Sumbu, Lake Tanganyika	,, ,,
,,	1	imm.	,, ,, ,,	,, ,,
[Benson *et al.* (1971, *The birds of Zambia*. London: Collins) summarised the local records, and included a few additional to those above—Ed.]				
Botswana				
22.9.70	1	ad.	Lake Ngami	A. J. Tree (*in litt.*)
Moçambique				
12.3.72	1	ad.	Beira	B.G.D.
Rhodesia				
19.10.52	1	ad.	Pasi Dam, Gatooma	R. K. Brooke (*in litt.*)
3.4.60	1[2]	imm.	Chirundu	Tree (1961)
5.6.68	1	ad.	Chikwenya Is., Zambesi/Sapi junction	G. R. Thomson (*in litt.*)
9.6–31.7.67	1	imm.	Lake Kariba	B.G.D.
4.10.68	1	ad.	,, ,,	,,
22.12.69	1	ad.	,, ,,	,,
,,	1	imm.	,, ,,	,,
16.12.70	1[2]	imm.	,, ,,	,,
20.1.71	1	imm.	,, ,,	G. W. Begg (*in litt.*)
16.9.71	1	imm.	,, ,,	,, ,,
10.12.71	3	ads.	,, ,,	,, ,,
,,	2[2]	imm.	,, ,,	,, ,,
July 1973	1	ad.	,, ,,	A. J. Conway (*in litt.*)
21.5.66	1	imm.	Lake McIlwaine, Salisbury	R. K. Brooke (*in litt.*)
8.3.70	1	imm.	,, ,,	,, ,,
April 1970	1	ad.	,, ,,	R. A. Bourlay (*in litt.*)
13.2.71	1	ad.	,, ,,	R. I. G. Attwell (*in litt.*)
Nov 70–May 71	1	ad.	,, ,,	B. D. Connock (*in litt.*)
Jan–May 71	1	imm.	,, ,,	,, ,,
28.1.72	1	ad.	,, ,,	R. K. Brooke (*in litt.*)
,,	3	imm.	,, ,,	,, ,,
13.7.72	1	ad.	,, ,,	Tree (1973)
South Africa				
Dec 72–Jan 73	1	ad.	Umgeni River Mouth, Durban	P. A. Clancey (*in litt.*)
1972	1[3]	ad.	Natal Coast	,, ,,

[1] "moulting" (Long 1962) [2] moulting into adult plumage
[3] A live crippled bird in the aviaries, Mitchell Park, Durban.

TABLE 3

Black-backed gulls of uncertain identity or identified as *Larus dominicanus* now considered more likely to have been *L. fuscus*

Date	No.	Plumage	Locality	Source
Moçambique				
24.3.32	"several"	—	Beira	Bolster (1933)
8–9.3.35	"several"	ad. and imm.	"	Winterbottom (1936)
29.11–2.12.35	"common"	—	"	" "
17–18.5.37	2–9	—	"	Moreau (1938)
28.1.47	"several"	ads.	"	Benson (1948)
July, Aug 59	"several"	ad. and imm.	"	Worth (1960)
South Africa				
May 1941	1	—	Alexander Dam, Geduld	Joubert (1943)
—	1	—	Barberspan	Prozeski & Campbell (1951)
Feb 1952	1	—	"	Harwin (1952)
24.1.59	1	ad.	Odendaalsrus	Brooke (1960)

on the east coast but that "some of the black-backed gulls occurring at Beira may be applicable to *Larus fuscus* Linnaeus rather than *L. dominicanus*. No specimens exist at the present time in order to investigate this matter." Clancey's caution is noted since an occasional movement of *L. dominicanus* to as far north as Beira is not impossible but which I feel would be highly unlikely. In addition the lack of confidence in the identifications and the growing list of *L. fuscus* data from inland and coastal waters suggest that the above records were very likely to have been *L. fuscus* (Table 3).

The occurrence of *L. dominicanus* in south-western Madagascar at between 24° and 25° S is important in discussion relating to movements on the east coast of Africa. McLachlan & Liversidge (1970) state that it is a migrant from the Cape to Natal and northwards. Rand (1936) gives the earliest date of occurrence for Madagascar (in the extreme south-west) as 12 February and the latest as 4 March 1930. This would also imply that it is a migrant and if so South Africa would be the obvious origin of the birds. However, Milon (1950) records seeing 45 birds on 26 January, also in the extreme south-west, and the same author (1948) reports June and July observations on *L. dominicanus* from this same area. A female collected on 19 July had the ovary measuring 27 × 7 mm and the three bigger eggs measured 4·8 – 5·3 mm. Further north in western Madagascar, despite years of experience, Father O. Appert (*in litt.* to Benson) has only once seen a gull with a black mantle, which he believes was *L. dominicanus*, at Lac Iotry (22° S) on 12 May 1964. The presence of birds during summer and winter months together with the suggestion of local breeding points to a resident population of *L. dominicanus* in south-western Madagascar and not a migration from Africa.

On 12 March 1972, a single adult *L. fuscus* was seen together with several *L. cirrocephalus* and a single *L. leucophthalmus* in the fishing harbour at Beira (B.G.D.). This bird was flying above the other gulls and attempted to rob them of food picked up from the water. In striking contrast to the sooty black mantle and wings of *L. dominicanus* and the adult examples of *L. f. fuscus* personally seen on Lake Kariba this bird had a fresh slate-grey plumage characteristic of the British race *L. f. graellsii*. This race of *L. fuscus* generally winters on the Atlantic coast of Africa and has not been recorded from the inland waters of the continent (Archer & Godman 1937; Vaurie 1965; Moreau 1972). However, the bird collected at Kabeti (Table 1) was identified

as "probably a pale individual of *L. f. fuscus*, though showing some intergradation with *L. f. graelsii*" (Benson 1960). It would be surprising that an example of a western Palaearctic population should be found on the east coast of Africa. While the Beira bird could perhaps have followed the coast from the Mediterranean, Red Sea and southwards from Somaliland, the more likely possibility arises that it belonged to part of the *L. fuscus* complex of races from northern Europe or Eurasia. Indeed Voous (1965) gained the impression that birds observed at Mombasa, Kenya, were intermediate between *L. f. fuscus* and *L. f. graellsii* and suggested that they "probably belonged to some of the dark-mantled populations of *Larus fuscus antelius* from North Russia or Northwest Siberia." He mentioned too that they "did not clearly show the characters of the lighter and slightly more eastern populations more properly known as *L. f. heuglini*" although one bird "probably was slightly lighter."

Harris (1962) states that most of the British populations of *L. fuscus* move south between August and October and return during March and April. However, 83% of British ringed birds recovered from the Atlantic coast of Africa were in their first year and all June and July birds recovered abroad were under breeding age. This trend must also apply to other western and central European populations. It would seem, therefore, that the European visitors to Africa arrive largely in immature plumage and probably remain south until they approach maturity. While the bulk of the observations have been made during the months October to March both adults and immature birds have been recorded in southern and central Africa virtually throughout the year (Tables 1 and 2). Harris (1970) points out "that some gulls do not attain full adult plumage even when seven years old", thus the actual duration of stay in Africa by individuals is uncertain.

Acknowledgements: I am very grateful to Mr. M. P. Stuart Irwin of the National Museum, Bulawayo, and Mr. R. K. Brooke of the Durban Museum and Art Gallery for reading and commenting on an earlier draft of the text. I would also like to thank Dr. A. C. Kemp for examining material in the Transvaal Museum, Pretoria, and my colleague Mr. G. W. Begg of the Lake Kariba Fisheries Research Institute, Rhodesia, for collecting a specimen and providing several sight records at my request. I am particularly indebted to Mr. C. W. Benson for his criticism and contribution to the data on Madagascar. My thanks are also due to Mr. P. A. Clancey, Durban Museum and Art Gallery, and Mr. R. J. Dowsett, National Museum of Zambia, Livingstone, for providing much supporting data.

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Observations on a relationship between Crested Guineafowl and Vervet Monkeys

by Geoffrey Hill

Received 1st February, 1974

The Vervet Monkey *Cercopithecus aethiops* is the object of a continuing field study in a coastal forest on the Natal North Coast, a forest which is also the southernmost station of the Crested Guineafowl *Guttera edouardi.* In this forest there are four fairly large (*ca.* 15 individuals in each) groups of Vervet Monkeys. When they feed in trees they are the highest mammals in the forest and thus have the widest view of their surroundings. It appears that other animals take advantage of this factor, as on many occasions Bushbuck *Tragelaphus scriptus*, Blue Duiker *Cephalophus monticolus*, Red Forest Duiker *C. natalensis*, Common Duiker *Sylvicapra grimmia*, Cane Rats *Thryonomys swinderianus* and Crested Guineafowl have been noted feeding directly below the monkeys.

Crested Guineafowl, especially, are found below them more often than not. They associate chiefly in the late afternoon at which time both animals have their final feed before retiring to sleep. This association is advantageous to the Crested Guineafowl as the Vervet Monkeys are very messy feeders and are continually dropping food items and knocking down seeds and berries. Thus, by standing under the feeding monkeys, the guineafowl receive a constant shower of food, since many of the kinds of berries that the monkeys eat are also eaten by the guineafowl. The monkeys' faeces also contain a large quantity of undigested seeds which the Crested Guineafowl probably eat (e.g. *Lantana camara*, *Melia azederach*).

Bordering the forest is a sugar cane field in which the Vervet Monkeys spend considerable time, breaking canes which they carry off to the trees at the edge of the forest to eat. On most occasions the Crested Guineafowl accompany the monkeys to the forest edge and then wander along in the cleared fire-break which separates the forest from the sugar cane, where they dig up grubs and bulbs for food. They seldom stray far from where the monkeys are.

When they are beneath the monkeys, the Crested Guineafowl seem to be less afraid of those things that would normally disturb them. While sitting on the ground watching the Vervet Monkeys, I have had Crested Guineafowl come within a metre or so of me, and on occasion they have approached my dog closely. Even when I move, the guineafowl do not appear to be unduly disturbed.

It is not only the guineafowl who derive advantages from associating with the Vervet Monkeys: there is also a reciprocal advantage, since the monkeys react to the alarm calls of the guineafowl. When a flock of Crested Guineafowl are disturbed by my walking through the forest, they give a rapid "clicking" call and, often, within a few seconds, the Vervet Monkeys bark from some distance away. After 20 to 40 seconds, depending on how far away they are, the monkeys appear as if to investigate what had disturbed the guineafowl.

When I take a companion into the forest with me, the Vervet Monkeys begin to bark as soon as they see him and normally the Crested Guineafowl "click" excitedly and move away from the area as if they recognize that the monkeys are barking at something which is a potential danger. But, on other occasions, their curiosity appears to overcome them and they venture closer to inspect the intruder. This foraging and warning relationship between the Crested Guineafowl and the Vervet Monkeys appears to be unreported in the literature.

I am obliged to Mr. R. K. Brooke for criticizing a draft of this communication.

A new subspecies of *Accipiter tachiro*

by M. Desfayes

Received 23rd November, 1973

In April and May 1971, the author made a collection of birds in the province of Kaffa in southwestern Ethiopia. The region extending from western Kaffa to Goré in the Illubabor province is covered with very dense unbroken humid forest which appears to be the largest expanse of rain-forest east of the Congo from which it is isolated by over 1000 km of dry savanna. As should be expected, a certain number of species collected are darker than those from the rest of Ethiopia, which is generally drier.

Of the better differentiated birds are two specimens, a male and a female, of *Accipiter tachiro*. Both are notably darker below than any other specimens of the species. The barring of the female is definitely brown, not rufous. The flanks and thighs are also darker in the same proportion. The male is rufous below but also darker. Both sexes are separable at a glance from specimens of *unduliventer* (type locality Simien) from Ankobar, Shoa, Ali-Beret, Arussi and Manaco (between Anadi and Alelu, southern Ethiopia), and differ even more from *unduliventer* than do many specimens of *sparsimfasciatus* (type locality Zanzibar). The former is described as "darker, with heavier barring below

more washed with chestnut" (Brown & Amadon 1968); this character may show in a fair series but is not evident in a small collection and individuals are not always separable, as also noted by White (1965). The two Kaffa specimens are similar in size to *unduliventer* for which Brown & Amadon give: wing ♂ 184, ♀ 216 mm, and thus smaller than *sparsimfasciatus*. Weight appears to be a usually good indicative of size variations although this character is little used in subspecific taxonomy, in part because of the paucity of data, although see Amadon (1943). The weights of two females, 408 and 509 g, given by Brown & Amadon (1968) are a good measure of the size of *sparsimfasciatus* although they seem to be among the heaviest. These figures must have been derived from Moreau (1944). Verheyen (1953) gives ♂ 230 g for *sparsimfasciatus* from southern Zaire and Britton (1970) an identical figure from Tanzania, also in the distribution range of *sparsimfasciatus*. These weights as well as those from Kaffa specimens given below show the remarkable size dimorphism in this species. For the dark population of southeastern Ethiopia, I propose the name:

Accipiter tachiro croizati, subsp. nov.

in honour of Dr. Leon Croizat (botanist, biogeographer and scholar, Member of the Academy of Sciences of Caracas, Corresponding Member of the American Museum of Natural History) who has devoted to ornithology a sizeable portion of his important work.

Type: Adult male with testes enlarged. Locality: Afallo, altitude *ca.* 2050 m, Ghera region, 36°20′ E, 7°45′ N, Kaffa province, 1 May 1971. U.S. Nat. Mus. No. 522426.

Paratype: Adult female with ovary developing. Locality: Challa, altitude *ca.* 2100 m, about 20 km north of Afallo, 8 May. US. Nat. Mus. No. 522427.

Diagnosis: Differs from *unduliventer* and from all other subspecies of *Accipiter tachiro* in being darker both above and below ("Verona brown" *vs.* "pecan brown" of Ridgway's Color Chart, 1912). Size smaller than *sparsimfasciatus*, equal to *unduliventer*. Tail spots large and distinct. Under tail-coverts barred with grey in ♂, partly and very lightly so in ♀.

Colours of bare parts: Male: Iris orange-yellow; orbital skin same but paler. Bill: upper mandible blackish, lower dark brown at tip, bluish at base; cere and commissures lemon-yellow. Legs and feet yellow; soles paler and brighter yellow; claws dark brown. *Female:* Iris and orbital skin yellow. Bill: upper mandible blackish-slate, bluish at base of sides; cere and commissures greenish yellow; lower mandible blackish-slate, bluish in the middle, pale yellow at base. Legs, feet, soles and claws as in male.

Measurements: Wing ♂ 172, ♀ 217; tail ♂ 150, ♀ 190; bill from skull ♂ 22, ♀ 25; tarsus ♂ 54, ♀ 60 mm. Weight ♂ 145, ♀ 260 g.

Material examined: Specimens of *unduliventer*, *sparsimfasciatus* and nominate *tachiro* in the U.S. National Museum and the American Museum of Natural History.

Distribution: The rain-forest of southwestern Ethiopia.

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The eggs of the Golden Conure *Aratinga guarouba*

by Michael P. Walters

Received 4th January, 1974

There appear to be no references to the eggs of the Golden Conure in literature beyond the statement by Snethlage (1935) that an egg removed from the oviduct of a specimen collected on the Tocantins river on 13th October 1912, was "almost round". This has been quoted in Meise (1963–4) and by Forshaw (1973), without further comment. The collection of the British Museum (Natural History) contains seven eggs of this species, a c/6 laid in August 1938 (reg. no. 1938.8.1.1–6) from the collection of the Marquis of Tavistock, and a single egg recently acquired from the collection of the late Col. F. E. W. Venning (reg. no. 1970.6.520). The Tavistock eggs are roundish ovals, two of them being narrowly pointed at the small end. They are smooth, but not glossy, and measure 35·4 × 25·7; 34·3 × 25·1; 32·9 × 26·5; 35·1 × 25·8; 32·2 × 25·2; and 32·7 × 26·5 mm. The Venning egg is slightly smaller, 30·2 × 25·2 mm, and is almost round.

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Reduced natal down in some emberizine species

by C. J. O. Harrison

Received 18th January, 1974

In describing the natal pterylosis of the Swallow-tanager *Tersina viridis*, Collins (1973) has compared the extremely scanty down of this species with the more plentiful down of other Thraupinae species and suggested that the reduction of neossoptiles in that species and in the Violet Euphonia *Tanagra violacea* is correlated with a nest in a cavity or closed site as opposed to the more typical cup nest in an open site. He comments that further information is needed on this feature of tanagers and allied species.

Recently observations were made on the captive breeding of Saffron Finches *Sicalis flaveola* (Harrison 1973). This species normally nests in a cavity or in the closed nest of a larger bird, and within the site builds a cup-type nest. The site used by the captive birds was a small hollow log, and it was only possible to examine one nestling at about six days old. This was almost naked, but close examination showed a few tiny, sparse down tufts on the middle of the dorsal tract, a few more on the upper wings, and one or two over each eye.

Skutch (1954) cites the Yellow-faced Grassquit *Tiaris olivacea* as exceptional in having completely naked nestlings, and the species builds a thick-walled, domed nest with a small lateral entrance.

Both *Sicalis* and *Tiaris* belong to the Emberizinae, and the present evidence suggests that in both subfamilies of the Emberizidae there is a reduction in the natal down of species nesting in closed nests, or nests within cavities.

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Notes on the Lammergeyer *Gypaetus barbatus* on Kilimanjaro

by I. H. Dillingham

Received 1st February, 1974

The summary of records of the Lammergeyer in East Africa by Schüz (1973, *Bull. Brit. Orn. Cl.* 93: 161–163) has prompted me to publish two records of probably the same individual of this species seen by myself on 23rd and 26th October 1956 at Engare Nairobi on the western slopes of Kilimanjaro at an altitude of approximately 4500 feet.

On the first occasion I had a clear view of an adult Lammergeyer about 75 yards from me at a height of about 100 feet circling over farmland. It then flew to a farm about half a mile away where it repeatedly circled low down over some outbuildings before disappearing eastwards. On the second occasion I was in the same general area when an adult was seen gliding overhead, again at a height of no more than 100 feet, finally disappearing in a northerly direction without circling.

These two records at Engare Nairobi would appear to be the lowest altitude at which this species has been recorded on Kilimanjaro. This area is largely devoted to cattle farming and is relatively flat. Despite frequent visits to Engare Nairobi and the surrounding country during the period June 1956 to August 1958 this species was never encountered on any other occasion.

It may be noteworthy that all the records of the Lammergeyer on Kilimanjaro mentioned by Schüz (1958, *Journ. Ornith.* 99: 394–398 and 1973, *op. cit.*) for which a date is quoted, plus my own records, fall within the period late August to December. The Mawenzi summit of Kilimanjaro is the most likely breeding area yet it is the most inaccessible and infrequently visited. The preponderance of records in the second half of the year, nearly all of which are on the west or south-west of the mountain, may represent post breeding dispersal from the eastern summit Mawenzi. An alternative explanation for this distribution of the Lammergeyer is that it breeds on Mount Meru which is a mere 35 miles west to south-west from the Shira Plateau. This mountain would appear to provide a much more suitable breeding habitat for this bird with its numerous crags. There is evidence from King (1973, *Bull. Brit. Orn. Cl.* 93: 68) that the Lammergeyer occurs there, but again it is a September record.

I am most grateful to Mr. C. W. Benson for assistance in the preparation of these notes.

A discography of bird sound from the Neotropical Region

by Jeffery Boswall & W. P. Freeman

Received 5th December, 1973

This paper is the sixth to be published of a number of projected papers, each covering a major zoogeographical region of the world. For the Palearctic see Boswall (1964, 1966, 1969a, 1969b, 1970, 1971) and Sellar (1973); for Australasia see Boswall (1965); for the Ethiopian Region Boswall & North (1967); for the Antarctic Boswall & Prytherch (1969); and for the Oriental Region Boswall (1973). A Nearctic discography is in final draft (Boswall & Kettle in press).

The earliest Neotropical recordings of birds were probably those made on Barro Colorado Island, Panama, during World War II (Wyring, Allen & Kellogg 1945; Kellogg & Allen 1950, no. 1 in the following discography; and Asch & Ramsey 1952, no. 2 in the following discography).

Since that time no doubt many workers have recorded birds in the Neotropical region. To try to bring together details of their results would not be an easy task. The primary purpose of this paper is to give details of published recordings; however some indication of the unpublished recordings that have been made is not entirely out of place.

One of the outstanding contributions is that of the indefatigable L. Irby Davis who has recorded well over 350 species in Mexico, many of which are held at the Balcones Research Centre, University of Texas, Austin. Burton (1969), the BBC's wildlife sound librarian, includes reference in his main catalogue to a Least Bittern *Ixobrychus exilis* recorded in Colombia, and a Banded Wren *Thryothorus pleurostictus* recorded in Mexico. In the first supplement to the main catalogue the same compiler (Burton 1971) refers to a range of recordings by Ian Strange from the Falkland Islands in the South Atlantic, as well as to some Trinidad recordings by D. W. Snow, and to one or two from Little Tobago (also in the West Indies) by Robina Gyle-Thompson. Burton's second supplement (1972) refers to a few recordings made in Jamaica by Oxford Scientific Films Ltd., to some additional Falkland Island recordings by Ian Strange and Tony Morrison, and to recordings from the Galapagos Islands in the Pacific made by Roger Perry and Bob Wade.

Further recordings from the Galapagos Islands and from Barro Colorado Island in the Panama Canal have recently been incorporated into the BBC's Sound Archives (Burton 1973). And it is hoped that recordings of about forty bird species made in Argentina between October 1971 and March 1972 by Robin J. Prytherch, a member of the BBC Wildlife Expedition to Southern South America, may eventually be included in the BBC Sound Archives.

Recordings of *ca.* 20 species made in Buenos Aires Province of Argentina by Donaldo MacIver Junior have been deposited with the British Library of Wildlife Sounds at the British Institute of Recorded Sound in London.

A dozen or so recordings made in Brazil are preserved in the Library of Natural Sounds at the Laboratory of Ornithology at Ithaca, New York State, U.S.A., as are many Caribbean recordings of George B. Reynard, and no doubt many others from the region in question.

The discography

1. Kellogg, P. P. & Allen, A. A. 1950. *Jungle Sounds*. One 12-inch 78 r.p.m. disc no. BL 4219–20. Comstock Publishing Co., Inc., Ithaca, N.Y., U.S.A. [11 birds, 1 mammal and 7 amphibians, recorded in Panama.]

2. Asch, M. & Ramsey, F., Jr. 1952. *Sounds of a Tropical Rain Forest in America.* One 12-inch 33 r.p.m. disc no. FX 6120. Produced for the American Museum of Natural History by Folkways Records, 701, 7th Avenue, New York City, N.Y., 10036, U.S.A. [About 22 birds, 1 mammal, a few insects, and about 6 amphibians, recorded in Panama and at the Bronx Zoo, New York City.]

3. Davis, L. Irby. 1958. *Mexican Bird Songs.* One 12-inch 33·3 r.p.m. disc. Laboratory of Ornithology, Cornell University, Ithaca, N.Y., U.S.A. [74 birds.]

4. Gunn, W. W. H. 1959. *A Day at Flores Morades,* no. 5 in the *Sounds of Nature* series. One 12-inch 33·3 r.p.m. disc, no. T46558–9. Federation of Ontario Naturalists, Don Mills, Ontario, Canada. [31 birds, 1 mammal and 2 insects. Revised and reissued as no. 35.]

5. Coelho, M. About 1960. *Hunting all through Brazil* (Portuguese). One 12-inch 78 r.p.m. disc, no. PR244. Gravacos Electricas, Sao Paulo, Brazil. [Instrumental imitations of about 12 birds. See Mitchell (1957: 32).]

6. Zuber, C. 1960. *Galapagos* (French). One 7-inch 45 r.p.m. disc, no EX 253. From La Boite a Musique, 133 Boulevard Raspail, Bam, Paris, France. [7 birds and 1 mammal.]

7. Frisch, J. D. 1961. *Songs of the Birds of Brazil* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10502. SOM, Sao Paulo, Brazil. [33 birds, 2 insects and 1 amphibian.]

8. Frisch, J. D. 1962. *Songs of the Birds of Brazil* (Portuguese). One 12-inch 78 r.p.m. disc, no. S596. SOM, Sao Paulo, Brazil. [9 birds from the 33 species on no. 7.]

9. Frisch, J. D. 1962. *Songs of Birds of South America* (Spanish). One 12-inch 33·3 r.p.m. disc, no. LP 040. Copacabana, for El Palacio de la Musica S.A., Venezuela. [34 birds; a Spanish version, with changed title, of no. 7.]

10. Frisch, J. D. 1962. *Songs of the Birds of Brazil* (Italian). One 12-inch 33·3 r.p.m. disc, no. Sabrina SA 10.001. Compagnia Discografica Sabrina, R. Mario Pagano 61, Milan, Italy. [34 birds; an Italian version of no. 7].

11. Frisch, J. D. 1962. *Songs of Birds of Brazil* (Esperanto). One 12-inch 33·3 r.p.m. disc, no. SCLP 10523. SOM, Sao Paulo, Brazil. [34 birds; an Esperanto version of no. 7.]

12. Frisch, J. D. 1962. *Songs of Birds of South America* (Spanish). One 12-inch 33·3 r.p.m. disc, no. OL 7012. Opus, Surco Industrias Musicales S.R.L., Argentina. [34 birds; an Argentinian version of no. 7.]

13. Frisch, J. D. 1962. *Voices of the Brazilian Jungle* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10513, SOM, Sao Paulo, Brazil. [24 birds, 1 mammal, 2 insects and 1 amphibian.]

14. Frisch, J. D. 1963. *Voices of the Amazon, with the Legendary Song of the Musician Wren* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10525. SOM, Sao Paulo, Brazil. [28 birds, 4 mammals, 1 insect and 2 amphibians.]

15. Frisch, J. D. 1963. *Echoes of the Green Hell* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10527. SOM, Sao Paulo, Brazil. [20 birds, 4 mammals, 2 reptiles, 1 amphibian, 4 fish, 6 insects and 1 arachnid.]

16. Schwartz, P. 1964. *Bird Songs from the Tropics,* Vol. 1 of *Naturaleza Venezolana.* One 12-inch 33·3 r.p.m. disc. Instituto Neotropical, Apartado 4640 Chacao, Caracas, Venezuela. [40 birds.]

17. Salibi, Dr. José, Jr. 1964. *The Chestnut-bellied Rice Grosbeak* (Portuguese). One 7-inch 33·3 r.p.m. disc, no. C.S. 70.071. Discos RGE Ltda, Rua Paula Souza 181, 2.0 e 5.0 andares, Sao Paulo, Brazil. [One bird in captivity.]

18. Frisch, J. D. 1964. *Songs of Birds of Brazil* (Portuguese). One 7-inch 45 r.p.m. disc, no. COP 73037. Copacabana, Discos de Radio Triunfo, Lda, Porto, Portugal. [7 birds; a Portuguese edition of part of no. 7.]

19. Frisch, J. D. 1965. *Symphony of the Hinterland* (Portuguese). One 7-inch 33·3 r.p.m. disc, no. 5001. SOM, Sao Paulo, Brazil. [Human musical arrangements intermingled with the songs of unnamed Brazilian birds; of little ornithological importance.]

20. Frisch, J. D. 1965. *Symphony of the Dawn* (Portuguese). One 7-inch 33·3 r.p.m. disc, no. 5002. Sabia, SOM, Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with the songs of unnamed Brazilian birds.]

21. Frisch, J. D. 1965. *Symphonies of the Canaries* (Portuguese). One 7-inch 33·3 r.p.m. disc, no. 50.004. SOM, Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [One captive bird with a background of organ music.]

22. Frisch, J. D. 1965. *Symphony of the Brazilian Birds* (German). One 7-inch 33·3 r.p.m. disc, no. 5004. Produced for Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with songs of unnamed Brazilian birds.]

23. Frisch, J. D. 1965. *Symphony of the Brazilian Birds* (Italian). One 7-inch 33·3 r.p.m. disc, no. 5005. Produced for Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with the songs of unnamed Brazilian birds.]

24. Frisch, J. D. 1965. *Symphony of the Brazilian Birds* (French). One 7-inch 33·3 r.p.m. disc, no. 5006. Produced for Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with the songs of unnamed Brazilian birds.]
25. Frisch, J. D. 1965. *Symphony of the Brazilian Birds* (Portuguese). One 7-inch 33·3 r.p.m. disc, no. 5007. Produced by Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with songs of unnamed Brazilian birds.]
26. Frisch, J. D. 1965. *Symphony of Brazilian Birds.* One 7-inch 33·3 r.p.m. disc, no. 5008. Produced for Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with songs of unnamed Brazilian Birds.]
27. Frisch, J. D. 1965. *Symphony of Brazilian Birds* (Japanese). One 7-inch 33·3 r.p.m. disc, no. 5010. Produced for Varig Airlines by SOM Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with songs of unnamed Brazilian birds.]
28. Frisch, J. D. 1965. *The Legendary Paradise of the Indians* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10.534. SOM, Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [35 birds, 2 mammals, 1 insect and 1 amphibian.]
29. Frisch, J. D. 1965. *Bird Songs of Brazil and Other Jungle Voices.* One 7-inch 45 r.p.m. disc, no. EP 4618. Produced for Varig Airlines by SOM, Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [14 birds, 1 fish, 1 insect and at least 1 amphibian.]
30. Schwartz, P. 1965. *Sounds of the Llanos I.* Vol. 2 of *Naturaleza Venezolana.* One 12-inch 33·3 r.p.m. disc with descriptive booklet. Instituto Neotropical, Apartado 4640 Chacao, Caracas, Venezuela. [68 birds, 5 mammals, 2 amphibians and 1 insect.]
31. Schwartz, P. 1965. *Sounds of the Llanos II.* Vol. 3 of *Naturaleza Venezolana.* One 12-inch 33·3 r.p.m. disc with descriptive booklet. Instituto Neotropical, Apartado 4640 Chacao, Caracas, Venezuela. [About 58 birds, including some 23 not recorded on Vols. 1 and 2.]
32. Frisch, J. D. 1966. *Symphony of the Brazilian Birds* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10.538. SOM, Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with songs of unnamed Brazilian birds, combining on one 12-inch disc the items appearing on the series of symphonies produced in 1965 for Varig Airlines.]
33. Frisch, J. D. Probably about 1967. *Symphony of the Birds.* One 12-inch 33·3 r.p.m. stereo disc, no. SE4442. MGM Records Division, Metro-Goldwyn-Meyer Inc., 1350 Avenue of the Americas, New York City, U.S.A. [An English language version of no. 32.]
34. Frisch, J. D. Probably about 1967. *Christmas Symphony.* One 7-inch 33·3 r.p.m. disc, no. Sabia Compacto 5014. SOM, Ind. e Com. S.A., Avenida Casper Libero, 58–12 Andar, Sao Paulo, Brazil. [Human musical arrangements intermingled with the songs of unnamed Brazilian birds.]
35. Gunn, W. W. H. 1968. *A Day at Flores Morades.* One 12-inch 33·3 r.p.m. disc, no. 5 in *Sounds of Nature* series, and no. T46558–9. Federation of Ontario Naturalists, Don Mills, Ontario, Canada. [31 birds, 1 mammal and 2 insects recorded in Venezuela. A revised and corrected edition of no. 4.]
36. Reynard, G. B. 1969. *Caribbean Bird Songs.* One 12-inch 33·3 r.p.m. disc. P. P. Kellogg, Cornell Laboratory of Ornithology, Ithaca, N.Y., U.S.A. [54 birds recorded in Puerto Rico and the Virgin Islands.]
37. Lindblad, Jan. 1970. *In Green Paradise* (Swedish). One 12-inch 33·3 r.p.m. disc, no. STP LP 102. Bonniers, Sweden. [38 birds, 10 mammals and 1 insect recorded in Guyana.]
38. Roché, J. C. Probably 1970. *The Bird as Musician. No. 7: Rufous-throated Solitaire and Bare-eyed Thrush.* One 7-inch 45 r.p.m. disc, no. P 039. L'Oiseau Musicien, 04-Aubenas-les-Alpes, Haute-Provence, France. Obtainable also from Discourses Ltd., 34 High Street, Royal Tunbridge Wells, Kent, U.K. [2 birds.]
39. Frisch, J. D. Probably about 1970. *Birds, Jungle, Melody* (Portuguese). One 12-inch 33·3 r.p.m. disc, no. SCLP 10543. SOM, Ind. e Com. S.A., Rua Franca Pinto, Sao Paulo, Brazil. [Side 1 records unnamed species of the Amazonian forest, species of the central plateau and of the southern forest, and one captive bird accompanied by human music. Side 2 consists of six human musical arrangements intermingled with songs of unnamed Brazilian birds.]
40. Frisch, J. D. Probably about 1971. *Sounds of the Trans-Amazonian Highway and Thrush Songs* (Portuguese). One 12-inch 33·3 r.p.m. stereo disc, SOM, Ind. e Com. S.A., Rua Eugenia S. Vitale, 173, Sao Bernardo do Campo (Rudge Ramos), Sao Paulo, Brazil. [Side 1 consists of 4 bands: the first records dawn sounds in the Amazonian forest, the second Indian songs and a flute, the third sounds of nightfall in the forest followed by reveille with an army unit, and the fourth sounds and music representing the opening up of the

backwoods. On Side 2 the songs of five Brazilian thrushes are given at length, but the species on Side 1 are not identified by name when they are heard.]

41. Roché, J. C. 1971. *Birds of the West Indies, 1: The Lesser Antilles, from Grenada to Guadeloupe* (French and English). One 12-inch 33·3 r.p.m. disc, no. G.06. L'Oiseau Musicien, 04 Aubenas-les-Alpes, Haute-Provence, France. Also obtainable from Discourses Ltd., 34 High Street, Royal Tunbridge Wells, Kent. U.K. [More than 13 birds; 4 insects and 3 amphibians.]

42. Gibson, D. and others. 1972. *Cries of the Wild, authentic nature sounds from the Audubon Wildlife Theatre Series*. One 12-inch 33·3 r.p.m. disc, no. T-57169. K.E.G. Productions, 556 Church Street, Toronto, Canada. [Side B, Band 3, running 3 minutes 57 seconds, gives 5 birds and 1 mammal recorded in Venezuela by W. W. H. Gunn, and an Amazon "atmosphere" recording by L. Koffler.]

43. Coffey, Ben, B., Jr. and Evans, E. R. Probably 1972. *Songs of Mexican Birds*. One 3·25 inch diameter reel of 7·5 i.p.s. tape. Ben B. Coffey, 672 N. Belvedere, Memphis, Tenn. 38107, U.S.A. [Over 24 birds, 1 mammal and 1 amphibian.]

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Nearctic waders in Sierra Leone—Lesser Golden Plover and Buff-breasted Sandpiper

by G. D. Field

Received 19th February, 1974

There are few records of American waders in tropical Africa but, judging by the numbers reported annually from Europe, this must partly reflect lack of ornithologists rather than birds. The only records for West Africa given by Mackworth-Praed & Grant (1970) are single occurrences of *Calidris melanotos* (Principe Island) and *Tringa solitaria* (Cabinda). Since then *Tringa flavipes* has occurred at Lagos (Wallace 1969) and *Numenius phaeopus hudsonicus*

at Freetown (Sudbury & Field 1972). An example of *Pluvialis dominica* at Lagos (Heigham 1969) was thought to be of the Siberian race, *P. d. fulva*.

On the nights of November 3rd and 4th 1973 exceptionally violent storms hit Freetown, bringing in their wake the first real rush of land migrants, particularly Sylviidae. It is possible that these storms were also responsible for the appearance of some scarcer waders, Knot *Calidris canutus*, first seen November 7th, and Oyster-catcher *Haematopus ostralegus*, first seen November 15th.

On the evening of November 6th at high tide J. B. Smart and I noted a small group of waders standing on the causeway along the edge of the muddy, mangrove-margined Aberdeen Creek at the north-west tip of the Freetown Peninsula. Most birds were *Charadrius hiaticula* and *Tringa hypoleucos* with one Grey Plover *Pluvialis squatarola* and beside it a bird which on its own might have been dismissed as *P. squatarola* but, seen alongside, obvious differences in size and stance proclaimed it a 'golden' plover. We were able to get to fifteen yards range and note plumage details, later flushing it so that the under-wing could be observed. It was located again on November 7th, 11th and 12th, on the latter two occasions on the mud, extremely tame and coming, as the tide rose, to within a few yards of me, associating here with Redshanks *Tringa totanus* and Greenshanks *Tringa nebularia*, wading up to its thighs in the water and eventually flying off solitarily.

Compared with the Grey Plover this bird was smaller and more delicate in all particulars, especially bill, always standing erect instead of in the hunched attitude typical of the Grey Plover, and in flight its wings were narrower and relatively longer, giving a more elegant appearance. Salient points: forehead, broad streak over eye, face and neck buff with a dusky patch on ear coverts; upperparts streaked and spangled dark and pale (white rather than gold); below buff with greyish feather centres on the breast, lower belly white. In flight wing dark above with no bar, below at a distance it looked all buff; closer, a distinction visible between the greyer axillaries and the palish buff rest of wing. It appeared to be a first winter bird, corresponding closely to the illustration of the American juvenile depicted on plate 121 (Witherby *et al.* 1940) except that the forehead was buff and the underparts less heavily marked.

On November 11th after the plover had flown, while watching the waders congregating on a still unflooded patch of mud, I noted a single bird fly in and land among a group of Grey and Ringed Plovers. Almost immediately the latter took off and flew out to sea, the strange wader accompanying them. On the ground it was taller than the Ringed Plovers, though in the air it seemed roughly the same size. All I had time to note was dark wings and tail with no white, buff below, and yellow legs. Searching on November 12th and 13th brought no sign of it, but on November 15th a very dark wader flew from the mangroves and landed on the beach among a group of Sanderlings *Calidris alba* and an Oyster-catcher. Wary at first, it later ignored me almost entirely and let me approach to within ten yards, running along the tide edge and refusing to fly when I wanted to flush it. Later it flew to open sandy grass beside the road and was still there when I left but was not seen subsequently.

As this is the first record for Africa of a Buff-breasted Sandpiper *Tryngites subruficollis* I give a full description: general appearance on the ground, a very buff bird with clearly patterned dark and buff upperparts, short black bill and yellow legs. It stood much higher than the Sanderlings, thus looking a bigger

bird, and appeared to be of the general size and height of a Wood Sandpiper *Tringa glareola*. In detail: crown brown-streaked with a darkish streak down centre of nape; whole of rest of head, forehead, supercilium, cheeks, neck, plain buff, the impression being that the area immediately round the eye was paler than the rest. Wings boldly patterned dark and buff, the scapulars particularly variegated with dark feather centres and broad buff margins. Whole underside pale buff, sides of breast spotted with grey-brown at close view; under tail coverts paler. Eye dark, bill black, rather stout and appearing slightly down-curved, a little longer than the length of the head. Legs rather bright yellow. In flight from above, dark with no discernible wing-bar and no white in the tail though this was patterned when spread on landing. Underside of wing wholly white, in marked contrast with breast and upperside. Wings rather long and pointed. At rest the bird stood high with a well-developed neck. It both walked and ran, feeding at the tide's edge by turning over small pieces of stranded seaweed, picking them up in the beak and shaking them, often dropping them and giving an exaggerated jump backwards as though in alarm.

Without access to skins I cannot be categorical about the race of *P. dominica*, but its appearance in conjunction with an undoubted American species makes it reasonable to suggest that it too was of American origin, the race *P. d. dominica*.

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The Little Egret *Egretta garzetta* in Wallacea

by C. M. N. White

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Little Egrets have been recorded from at least fifteen islands in Wallacea, mainly from Celebes and some adjacent islands and from north and south Moluccas. Records from the Lesser Sunda and South West islands are scantier. Amadon & Woolfenden (1952: 12–13) refer these records to *E. g. nigripes* with legs and feet concolorous and black, which occurs from Java and Borneo to Australia and New Guinea.

In recent years it has become apparent from ringing recoveries that the nominate *E. g. garzetta* with yellow feet, breeding in Japan, winters in numbers in the Philippine Islands. This indicated that a new examination of birds from Wallacea was desirable to ascertain whether any yellow footed examples, presumptive migrant *garzetta*, occur there. I am grateful to Dr. K. C. Parkes for information about his study of Philippine birds which has subsequently (1973: 14–15) been published. In addition to yellow footed *garzetta*, he found evidence of a breeding population in the Philippines with

greenish yellow feet spotted with black. This he suspected might represent a third form, perhaps undescribed. Parkes had seen few breeding specimens from the Philippines, but found that Tweeddale and McGregor had given descriptions of such birds with spotted feet which were consistent with the few specimens he had examined.

I am also grateful to Dr. G. F. Mees for information and comments about specimens in the Leiden Museum. Eleven recently collected and undoubtedly breeding birds from Formosa all have black feet as in *nigripes*. It is thus strange that no black footed breeding birds have been found in the Philippines, and there would seem to be need for more investigation of the foot colour of Little Egrets breeding there. This is indicated by the situation in Wallacea.

Most specimens in Leiden are black footed *nigripes* including one from Sangihe, north of Celebes. However, a few from Celebes appear to have had the feet blotched black and yellow, much as described by Parkes for Philippine birds. I also note that Siebers (1930: 211) in recording two examples collected by Toxopeus in Buru in May and June 1921 gives the recorded soft parts of one as "feet black" and of the other as "feet olive . . . (illegible)." Thus one of these birds from Buru probably had spotted feet like the Philippine birds. It is thus possible that birds with spotted feet may be a phenotype which occurs among black footed *nigripes* rather than a separate geographical form. New data on Philippine birds is required to throw light upon the fact that a series from Formosa is black footed like most birds from Wallacea whilst a few from Wallacea have spotted feet like those so far examined or described from the Philippines. On the possibility of some individual variation in foot colour, it should be noted that Hüe & Etchécopar (1970: 64) mention birds with black feet on the south side of the Caspian Sea in the range of nominate *garzetta*.

There is evidence that occasional yellow footed migrant *garzetta* reach Wallacea. One from Menado, north Celebes, and just south of the Philippines, in the Leiden Museum, collected by F. von Faber and unfortunately not dated, seems to be a migrant nominate *garzetta*. Another possible example is one from Ambon collected by Teysmann in 1877 with apparently yellow feet, though as it had been mounted there remains the possibility of post-mortem changes.

There remains the question of how far *E. garzetta* breeds in Wallacea. There seem to be no records of breeding colonies and Australian breeding *nigripes* are known from ringing recoveries to be strongly migratory, reaching New Guinea, New Britain and New Zealand. Possibly they also migrate into Wallacea. Stresemann (1914: 65) reported small flocks as common in Seran in October and November which could have been such migrants, as could the two from Buru mentioned above. Such negative evidence is inconclusive but there seems to be no evidence that *E. garzetta*, *E. alba* or *E. intermedia* breeds in Wallacea. All three however are known to breed in heronries in west Java.

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The relationships of *Buettikoforella bivittata*: some considerations

by Murray D. Bruce

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Buettikoferella is the only endemic genus of Timor, with one species, *B. bivittata*, considered by Mayr (1944: 171) to be "probably of western origin". It was originally described in *Napothera* and subsequently placed in *Drymocataphus* (=*Pellorneum*) and *Dumetia* until separated into a monotypic genus in 1895. The placements did not question its assignment with these Oriental timaliines. Mayr (*op. cit.*: 158) pointed out that in addition to resembling these genera, it resembled "many of the grass warblers", such as the Australasian "*Eremiornis*, *Megalurulus*, *Cichlornis*, and *Ortygocichla*", which may be timaliine and not sylviine, since suggested with allied groups, e.g. *Malurus* (Harrison & Parker 1965), but other evidence may not support this (Sibley 1970: 73).

During a visit to Portuguese Timor, in August 1972, I recorded *Buettikoferella* in open scrub and grass areas of the lowlands, singly or in pairs, on the ground or perched in low trees and bushes. The flight was short and slow with dipping, and slight drooping of the long tail, which, on alighting, was raised and lowered a few times. The behaviour of *Megalurulus mariei* is apparently similar. It is found singly or in pairs, on the ground, in tall grass and undergrowth. Its flight is short and direct with dipping, and the tail is thrown slightly from side to side, cf. Warner (1947: 176), who compared it to *Telmatodytes*. *Megalurulus* shares "a greatly exaggerated tail" with *Buettikoferella* and *Eremiornis carteri*. The latter, of similar habits, has been compared with *Stipiturus* (McGill 1970: 33).

Cichlornis grosvenori is found on or near the ground in small groups and clings vertically to bamboo like a wren. *Ortygocichla rubiginosa* has similar habits, cf. Gilliard & LeCroy (1967: 205), and cocks its tail upright when on the ground (R. I. Orenstein pers. comm.). New Zealand's *Bowdleria punctata* may belong here. I observed it singly in swampy grasslands and it has a weak, undulating flight, drooping its long tail, which it flicks when perched on grass stems.

Napothera and *Pellorneum* include primarily terrestrial species of forested areas, e.g. *P. capistratum* (Smythies 1968: 420). The skulking *Dumetia hyperythra* is found in small flocks in tall grass, undergrowth or on the ground, and has been compared with *Stachyris* (Ali & Ripley 1971: 180).

The strong Asiatic element in Timor's oscines, pointing to close affinities with timaliine genera for *Buettikoferella*, may be due to the possible extinction of the mountain monsoon forest during the Pleistocene, subsequently "reconstituted only recently" (Mayr 1965: 41). Similarities of *Buettikoferella* with the above 'grass warbler' genera and others, e.g. *Graminicola* and *Sphenoeacus*, may indicate timaliine affinities of some or all of these genera, or may only reflect convergence through similar feeding adaptations. Additional observations are needed to determine the extent of possible relationships.

I am grateful to C. W. Benson and C. M. N. White for comments on an earlier draft of this note.

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Species limits and variation of the New World Green Herons *Butorides virescens* and Striated Herons *B. striatus*

by Robert B. Payne

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The Green Herons *Butorides virescens* and Striated Herons *B. striatus* have usually been considered to be distinct species (Hellmayr & Conover 1948, Eisenmann 1952, Bock 1956, Peters 1931, Palmer 1962, Wetmore 1965, Slud 1967), though they have been mentioned as possibly conspecific (Hartert 1920, Eisenmann 1955, Parkes 1955). The Green Herons of North America look different from the Striated Herons of South America (brown-to-maroon neck in the former, pale grey neck in the latter), but intermediate birds live in a limited area between these in Panama and in the islands off the Caribbean coast of South America (Lowe 1907, Van Tyne 1950, Wetmore 1955). The question whether these herons are conspecific has been difficult to answer because of an earlier shortage of specimens (Hellmayr & Conover 1948: 184) and because wintering northern migrants have not been distinguished from local birds. A further question about species limits in the genus has arisen with Harris's (1973) report of possible sympatry with limited interbreeding of South American *B. striatus* with the dark Lava Herons known as *B. sundevalli* on the Galapagos Islands.

As part of a study of heron systematics (Payne ms.), I examined the 837 New World and about 500 Old World specimens of *Butorides* available in the American Museum of Natural History (AMNH), U.S. National Museum of Natural History (NMNH), Field Museum of Natural History (FMNH), and University of Michigan Museum of Zoology (UMMZ). I could not differentiate between first-year and older specimens. Birds in juvenile plumage that had not completed most or all of their postjuvenile moult were excluded from the colour analysis reported below. Wing lengths (unflattened chord), bill lengths (unfeathered base of culmen to the tip), and tarsal lengths were recorded to the nearest mm. Colour of plumage on the cheek and neck was compared with NMNH specimens selected to represent a smoothly graded series of nine colours from grey through brown and maroon (Table 1); these specimens were compared directly with specimens in other museums.

Throughout eastern North America, Green Herons occur with no obvious geographic differences in colour or size (Parkes 1955, my observations).

TABLE 1

Colour reference specimens of *Butorides striatus*

	Neck colour	*NMNH cat. no.*	*Locality*
1	grey	263848	Venezuela: Culata
2	grey, tinge brown	423096	Panama: Charco del Toro
3	grey, wash brown	444948	Panama: Rio Indio
4	brownish grey	400113	Panama: Pesé, Herrera
5	greyish brown	448634	Panama: La Jagua
6	greyish red-brown	368472	Colombia: Guajira
7	reddish brown	206343	Panama: Rio Indio
8	purplish brown	316840	Cocos Island
9	dark purplish brown	468699	Panama: Almirante

Green Herons in southwestern North America are larger and include more birds with paler brown necks than in the east (Fig. I). Overlap in size is little; informed ringers could distinguish nearly all individuals in areas where both might winter together, and on this criterion I recognize the western form as a subspecies (*anthonyi*) distinct from the eastern birds (*virescens*). Birds of Baja California south of 27° latitude are all very dark-necked, more purplish than brown, and are a distinctive subspecies (*frazari*). In Mexico, little colour variation occurs but wing length varies from 167 to 190 within Tamaulipas (considering only "summering" birds, taken between 1 May and 30 September, thereby hopefully excluding any "wintering" birds from more northern populations). Birds of Central America from Guatemala through El Salvador and Costa Rica average smaller than the North American sample from Michigan but considerable overlap occurs in wing length and no consistent colour differences appear. Birds of the West Indies average smaller than the eastern North American *virescens*, but, even excluding all winter birds, some overlap occurs with North American birds and considerable overlap with Mexican birds. Birds of the Bahama Islands are uniformly smaller and paler than the North American birds, and though similar in size and colour to a few birds of the Lesser Antilles, nearly all of the Lesser Antilles birds are darker and many are larger than the Bahamas birds. The form *bahamensis* thus appears to be a valid subspecies. The 11 various other described subspecies from some of the islands and from parts of Central America (including 10 names of Oberholser 1912) are not distinctive.

In Panama, dark-necked *virescens* occur both on the Caribbean side in the west (Bocas del Toro) and on the Pearl Islands on the Pacific side farther east; similar dark birds have been taken on Cocos Island. The Pearl Islands birds have been described as a subspecies, but similar birds occur on Swan Island in the western Caribbean, on Puerto Rico, and in Mexico (Tamaulipas), all of these in winter. Similar birds are also known from Cuba, the Isle of Pines, Quintana Roo, and Florida (Bangs 1915). It seems unlikely that all of these represent birds that dispersed from the Panama Bocas del Toro or Pearl Islands population, as the localities are so widespread; probably dark-necked herons breed as locally differentiated populations or as dark individuals through several parts of the range of the *virescens* group. For details of variation, see Fig. II.

East of 81° on the Isthmus of Panama both dark-necked and light-necked herons occur, but all of the dark necked herons (colours 7–9) are wintering birds and thus all may be migrants from further north. Nests on Barro Colorado attributed to *B. virescens* by earlier workers (in Eisenmann 1952: 12)

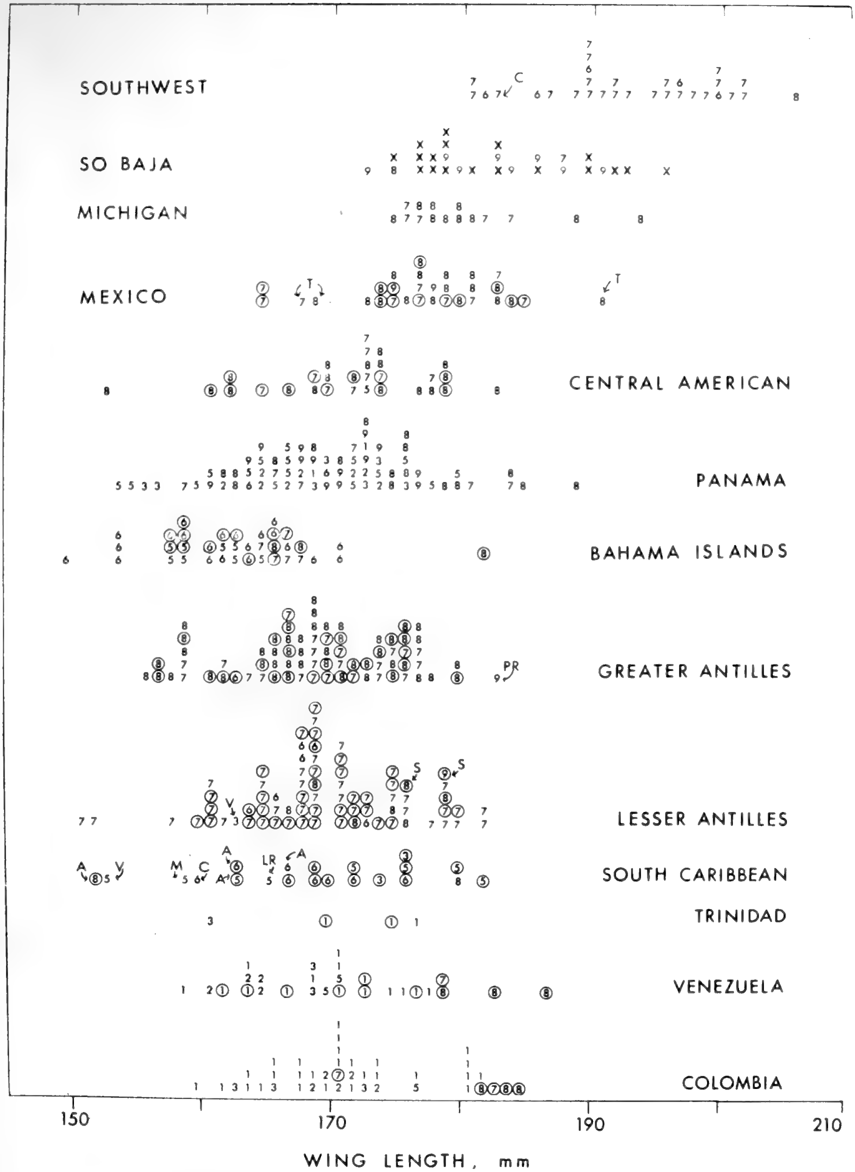

Figure I. Wing length (mm) and neck colour (cf. Table 1, except "5" in Fig. I= "4" or "5" of Table 1) of *Butorides striatus* populations in the New World (except most of S. America). Each number represents one specimen. Circled specimens were taken October to April and include wintering migrants as well as residents in winter; uncircled figures represent birds taken from May through September and likely to be breeding birds. Note: Winter specimens from southwestern U.S., Baja, Panama (see Fig. II), and Colombia (except wintering northern migrants) are not circled, and wintering Mexican specimens with wing-length larger than 181 mm are not included. For Southwest, C=Chihuahua; for Mexico, T=Tamaulipas; for Greater Antilles, PR=Puerto Rico; for Lesser Antilles and nearby islands, S=Swan Island, V=St. Vincent; for S. Caribbean, V=Espada, Venezuela, C=Guajira, Colombia, A=Aruba, LR=Los Roques, M=Margarita Id., all others= Tobago. X indicate a colour darker purple (less brown, more greyish) than colour 9 and is characteristic of birds of southern Baja.

apparently were identified without collecting the breeding birds; Van Tyne (1950) and Wetmore (1965: 87–88) attribute all breeding birds there to the intermediate, brownish-grey population. Birds taken from April through September on the Isthmus west of the Canal Zone (many collected recently by A. Wetmore) are all intermediate in neck colour between the western Panama *virescens* and South American *striatus*. The sample from Coclé, 80 km west of the Canal Zone, averages darker than the nonwinter sample from the Canal Zone itself (colour scores of 7, 6, 6, 4, 4; vs. scores of 5, 4–5, 4, 3, 3, 3, 2), suggesting a local cline of colour from western Panama–Coclé–Canal Zone–Colombia, and perhaps some genetic introgression. Birds of the Canal

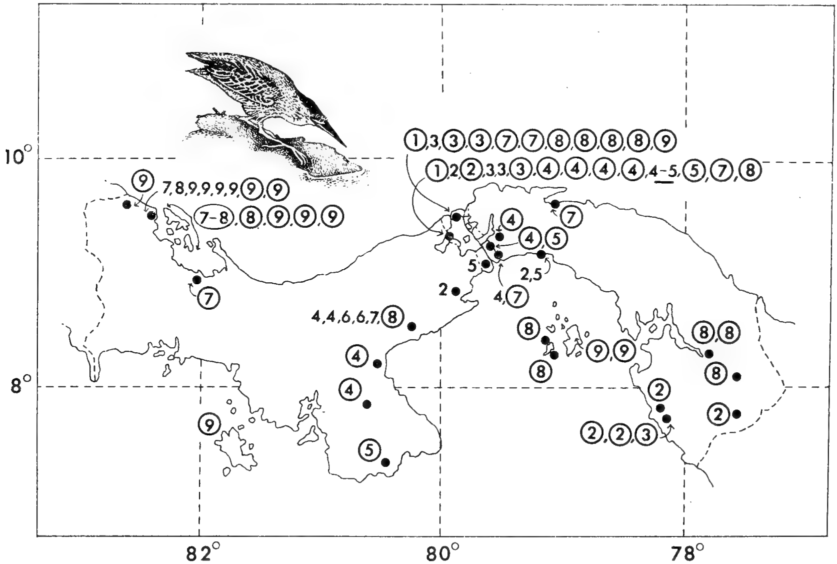

Figure II. Variation in *Butorides* herons in Panama. Each number represents the neck colour of one specimen (cf. Table 1). Circled numbers are winter birds (both residents and northern migrants), uncircled figures represent probable breeding residents (all May to September). Note that all non-winter birds in central and eastern Panama (including Canal Zone) are intermediate in neck score between South American birds (score 1) and western Panama birds.

Zone have sometimes been regarded as specifically different from *B. virescens* and Griscom (1929) described them as a subspecies, *B. striatus patens*. These birds were regarded as specifically distinct from *B. virescens* also by Wetmore (1965) though he doubted the validity of the subspecies as some South American birds also have similar brownish-grey cheeks and necks. Hellmayr & Conover (1948) came to the same conclusion. Van Tyne (1950: 5) considered these intermediate *patens* birds to be a race of *B. virescens* rather than *B. striatus* because the colour of their tarsi were like those of northern *virescens* (greenish) rather than southern *striatus* (reddish) and the colour of the lores was greenish yellow, not blue as reported for *striatus* by Griscom (1929). However, the tarsi of both North American *virescens* and South American *striatus* change seasonally from yellow or greenish to orange or orange-red in the breeding season (Palmer 1962: 415, Haverschmidt 1968: 13),

and the lores at least in *virescens* then change from "dull yellow lime" to "blue-black" (Palmer 1962: 415). No conspicuous colour differences are obvious in birds in similar physiological condition. To draw the line between a plumage colour of birds that here score 4 or 5 (or 5 or 6) and to call this a species difference seems arbitrary, and in fact the variation in plumage colour is continuous within these local populations. The Panama birds (excluding probable northern migrants) share characters with northern and southern birds and appear to be an intermediate population, probably of hybrid origin inasmuch as colour is variable within the populations.

Specimens from Cocos Island are few, and most of them are immatures. Slud (1967) describes both *B. virescens* and *B. striatus* from the island, the latter both the intermediate "*patens*" birds and birds indistinguishable from those of South America. Perhaps the birds of extreme plumage colours are nonbreeding migrants. No birds known to be breeding have been collected there.

Interbreeding between northern *virescens* and southern *striatus* is also indicated by the wide variation in plumage colour in populations on the islands off Venezuela and Colombia as well as in coastal populations of these countries. Birds of Aruba, Curaçao, Bonaire, and Los Roques include two individuals of intermediate colour as are mainland birds from the northern Gulf of Venezuela (Espada and Guajira). Further east, a bird from Margarita Island is greyish brown, and the Tobago birds are variable in neck colour suggesting genetic recombinations of northern and southern herons.

Herons of mainland South America include several specimens intermediate in colour between northern brown-necked *virescens* and grey-necked *striatus*. Intermediate birds from Venezuela are from Espada, Caicara, Paria, Cumana, Mt. Duida, and 1800′ at San Antonio, all but the last two on the Caribbean coastal plain. In Colombia, intermediate birds were taken on the Guajira Peninsula ("laying" bird of colour 6 at Laguna de Tucacas) and in the drainage basins of the Cauca and Magdalena Rivers, which flow to the Caribbean. One bird with colour 4 was taken 500 km upstream from the Cauca mouth, at Huila, La Plata. Birds of Trinidad, offshore from the mouth of the Orinoco, are mainly grey-plumaged as are most South American birds. Grey-necked birds predominate through Colombia except in the Magdalena basin and Guajira. Also taken in Venezuela and Colombia were birds as large and brown as the North American *virescens*; but all of these were in the northern winter, and there is no indication of overlap of breeding areas of the dark-brown-necked and grey birds in South America.

Brownish-grey-necked individuals occur through the rest of South America as an apparent uncommon colour morph (Table 2). Brownish-

TABLE 2

Variation in neck colour of *Butorides striatus* of South America*

	Colour of plumage on neck: number of specimens			
Country	*grey* (1)	*grey, tinge brown* (2)	*grey, wash brown or brownish grey* (3) (4)	*greyish brown* (5)
Surinam, Cayenne	25	2	1	1
Brazil	128	12	3	0
Ecuador, Peru	57	9	5	0
Bolivia	7	3	2	0
Paraguay, Uruguay	20	3	1	0
Argentina	21	0	1	0

* excluding Venezuela and Colombia (see Fig. I)

necked birds comprise nearly a fifth of the sample in Ecuador and Peru, well out of the range of the Caribbean drainage region; one with a score of 3 was taken at Mocori, Chaco, Argentina. The occurrence of these brownish-necked birds in South America does not necessarily indicate recent genetic input from the North American populations because the distribution does not coincide with the southern extent of the range of the wintering northern migrants. Possibly these forms may reflect an earlier contact of the southern *B. striatus* with northern birds, inasmuch as brownish-necked individuals do not occur in the populations of *B. striatus* in Africa through eastern Asia. Griscom (1929: 157) and Amadon (1953: 404) doubted that South American (*striatus*) and African (*atricapillus*) birds could be differentiated. However, in addition to the absence of brownish-necked individuals, African birds differ in having a more distinct rufous area on the upper breast, lateral to the lower neck streaks, and rufous (not grey-brown) lower neck streaks as Hartert (1920: 156) noted. Other variation among birds within South America includes colour of the belly; some are whitish, others darker grey, and others intermediate. The subspecific name "*cyanurus*" has been applied to southern birds, which supposedly have paler underparts. I noted considerable variation within all local populations and much overlap in belly colour in birds from central Argentina, from northern Argentina and southern Brazil, and from the more northern regions in South America, and consider it impossible to determine the locality of individuals on the basis of their underparts. No significant mean differences in wing length, bill length, and tarsal length could be determined among these South American populations, they all overlapped considerably.

The geographic pattern of variation among herons of the *Butorides virescens-striatus* complex indicates that they are conspecific. Both in Panama and on the coasts of Caribbean Colombia and Venezuela and their offshore islands, a wide range of phenotypes occur intermediate between the maroon-brown necks of the northern *virescens* group and the grey necks of the southern *striatus* group. This variation suggests secondary contact of two forms previously isolated geographically that have since interbred. These populations, lying mainly between 8° and 10° N latitude, are probably sedentary and receive limited gene flow from the northern and southern populations inasmuch as intermediates outnumbered the extremes in central and eastern Panama and on the off-shore Caribbean islands near South America. However, the wide range of neck colour and the presence of some dark-necked or grey-necked birds suggests some possible limited gene flow resulting from immigration, perhaps involving occasional local breeding of northern immigrants that may remain on their wintering grounds with the local population. The small size of the southern Caribbean birds may reflect past inter-breeding of northern South American birds with the small birds of the West Indies (cf. Fig. I). Because the birds of Panama and the southern Caribbean are variable and combine the differing character states of their neighbouring populations, it is unnecessary to recognize any subspecies within this region.

The species name to be used for the combined complex appears to be *Butorides striatus*. Linnaeus described both *striatus* and *virescens* in the same edition (10th, 1758) on the same page (p. 144) of "Systema Naturae." Parkes (1955) suggested that Lowe's 1907 treatment of the form "*robinsoni*" from Margarita Island was the first revision to recognize one of these forms as conspecific with the other. Lowe referred to two specimens as "*Butorides*

virescens robinsoni" on p. 554 but twice on p. 555 named them "*B. robinsoni*" and he contrasted this form to the South American birds, which he called "*B. striata*." Lowe did not state that *striatus* was conspecific with *virescens*, though such an act would be required (*International Code* 1961) for purposes of establishing a priority of names. I do not think that Lowe's attempts to describe two specimens with reference to no other forms designated more specifically than "*B. striata*" and "*B. virescens*" constitutes a first revision, as the *Code* Article 24 (a) (i) makes it clear that "The expression 'first reviser' is to be rigidly construed." Lowe appears to have regarded "*robinsoni*" itself as being as much of a species as he did *virescens* and *striatus*. On the other hand, Hartert (1920: 1249–1251) described and revised the group on a world-wide basis; he listed *virescens* as a subspecies of *Butorides striatus* (p. 1250). As Hartert's usage of *B. striatus* appears to be the first definite decision that the forms were conspecific, the first reviser principle requires that the species name to be used is *Butorides striatus*.

The Lava Heron of the Galapagos Islands has long been considered a species *Butorides sundevalli*, though Hartert (1920: 1250) regarded it as a subspecies of *B. striatus*. "Typical" adult specimens are dark grey, with blue-green lanceolate back plumes and a suggestion of pale streaks on the throat; the feet are red as in other breeding herons of the complex. Harris (1973: 267–268) has called attention to the occurrence of *B. s. striatus*-like birds on the islands and to specimens intermediate in appearance between *sundevalli* and *striatus*. The 50 specimens I have examined (NMNH, AMNH, FMNH, and 8 from the California Academy of Sciences) show all possible intermediate plumage colours (Table 3). Most of the paler birds differ from the South

TABLE 3

Colour variation in *Butorides striatus* of the Galapagos Islands

No. birds		*Plumage colour*
13		underparts blackish, unstreaked or with white edges of feathers on centre of throat.
13	(4)	underparts dark grey, nearly blackish, unstreaked except on throat; or throat grey, unstreaked (N=2).
11	(1)	underparts dark grey, belly lighter grey; sides of neck and cheeks blackish to dark grey; throat streaked with white edges.
3	(1)	underparts grey, darker than South American *B. s. striatus*; sides of neck and cheeks grey, below streaked white and grey-brown to upper breast (feathers of midline mainly white).
2	(2)	underparts light grey, like South American *B. s. striatus*; neck streaked white and grey-brown to upper breast; may have some rufous on upper breast but most birds have more grey-brown (less rufous) than *B. s. striatus*.

Numbers in parenthesis are a selected non-random sample of CAS birds. These numbers are not included in the first column. All of the plumage colour classes appear to intergrade with the next lighter and darker colours.

American *B. s. striatus* in having less rusty colour on the upper breast; the neck streaks of the Galapagos birds are grey-brown and the sides of the upper breast are grey, with no more than a trace of rufous, but otherwise the pale birds are inseparable from the South American birds. The difference in amount of rusty colour on the neck and breast indicates that the pale birds of the Galapagos are mainly local birds, not visitors from the mainland. Both the paler and the darker birds are widespread, and both occur together on

some islands. The high proportion of intermediate birds indicates considerable successful breeding and genetic recombination. Perhaps some differentiation of the herons occurred on different islands with subsequent inter-island reinvasion and interbreeding, or more likely the islands were invaded successfully by more than one wave of immigrants from South America in the past: either history might account for the variation among the Galapagos herons. The Galapagos herons are variable, but nearly all adults are separable from adults of the continental populations. The Lava Heron is probably best considered a distinct subspecies, *B. striatus sundevalli*, at least until studies on breeding pairs have been made in the islands.

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Bulletin of the

British Ornithologists' Club

Edited by

HUGH F. I. ELLIOTT

Volume 94 No. 3 September 1974

Special General Meeting

Notice is hereby given that a Special General Meeting of the Club will be held at the Café Royal, 68 Regent Street, London, W.1. on Tuesday, 19th November 1974 at 6 p.m. to consider and if deemed fit to pass the following resolution which will be proposed by the Committee as a special resolution in the terms of Rule (14) of the Club's rules:—

"That with effect from 1st January 1975 the annual subscription for members shall be £3·50 and that Rule (4) shall be amended accordingly".

By order of the Committee
RONALD E. F. PEAL
Honorary Secretary

Note: Since the annual subscription for members was raised to £2 10*s*. with effect from 1st January 1971 printing costs have risen over 48%. Most of the Club's expenditure is on printing and, with continuing inflation, an increase in the subscription rate is now essential to avoid the likelihood of a heavy financial deficit in the forthcoming year.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 94 No. 3 Published: 20 September, 1974

The six hundred and eighty-eighth meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1., on Tuesday, 14th May 1974 at 7 p.m.

Chairman: Mr. Peter Hogg; Present 18 members and eight guests.

The Speaker was Mr. D. T. Holyoak, who addressed the Club on Ornithological exploration and conservation in the Cook islands. He exhibited the skins of seven new forms from the southern Cook Islands, descriptions of which will be published shortly.

The six hundred and eighty-ninth meeting of the Club was held at Imperial College, Exhibition Road, London, S.W.7. on Tuesday, 2nd July 1974 at 6.45 p.m.

Chairman: Mr. Peter Hogg; Present 16 members and 11 guests.

Mr. Richard Blindell spoke on his current investigations into waders and wildfowl on the Essex coast and in the Thames estuary. After supper he was followed by Mr. Ian R. Deans, who addressed the Club on the results to date of work he is undertaking on gull ecology in the Thames estuary.

Duetting in *Hypergerus atriceps* and its Taxonomic relationship to *Eminia lepida*

by L. G. Grimes

INTRODUCTION

Hypergerus Reichenbach, 1850, *Syst. Av.*, pl. 54 (9), with type by monotypy *Moho atriceps* Lesson, 1831, *Traite Orn.*, p. 646, is a monotypic genus in the Passeriforms of uncertain affinities and so is *Eminia* Hartlaub, 1881, *Proc. Zool. Soc. Lond*, p. 625, with type by monotypy *Eminia lepida* Hartlaub with the same citation. Recent authorities (White 1960, Hall & Moreau 1970) hesitantly follow Chapin (1953) in assigning both genera to the warblers Sylviidae. Both species are found in similar habitats, *Hypergerus* in West Africa and *Eminia* in East Africa (White 1960), and Chapin found so many similarities between the two in the field that he surmised that the nest of *Hypergerus* when found would probably be very similar to that of *Eminia* (Chapin 1953, Van Someren 1956). This has been confirmed by Lang (1969).

Lanyon (1969) has emphasised that vocal characteristics may reveal close relationships between avian species which may not be discernible on the basis of morphology alone, and also may enable the recognition of groups of allopatric forms that comprise a superspecies. This approach has not been applied to species that are both morphologically distinct and allopatric, and placed in separate genera. *Hypergerus atriceps* and *Eminia lepida* (Hall & Moreau 1970) fit this category and if they are more closely related than their placement in separate genera suggests, then, following Lanyon's work, one might expect to find some similarities in their song structures.

The present study was stimulated through the review by Thorpe (1972) of duetting in birds. This is well known in *Eminia* (Chapin 1953, Van Someren

1956). Although *Hypergerus* duets regularly this has only recently been recognised. The occurrence of duetting in both species suggested that similarities, if any, in their duet structure might provide evidence for a close relationship between them. In this paper the vocal characteristics of the two species and their duets are compared and described, that for *Hypergerus* for the first time. Other comparative data on their biology is reviewed to support the thesis of this paper that the two species are congeneric.

MATERIALS AND METHODS

Two recordings of *Hypergerus*, involving the same birds, were made on 28 August 1972 in an area of dry thicket on an inselberg on the Accra Plains in southern Ghana. The time length of the recording was four minutes and includes 40 duet sequences. A Philips recorder (Model 2204) was used with the microphone placed at the focus of a parabola (0·6 m diameter). This recording was dubbed at 3·75 in/sec using a Philips recorder (Model 4307) on to a master tape which was used for all subsequent analysis with the Kaye sonograph in the wide band mode.

Two recordings of *Eminia* made by the late M. E. W. North in Kenya were obtained from the library of sounds of the Laboratory of Ornithology of Cornell University. The first was recorded on 17 and 18 December 1953 at Gituru (1° 10′ S, 36° 50′ E), and although it is just under seven minutes in length only nine duet sequences occur: part of this recording is found on the record "Voices of African Birds" (North 1958). The second recording of a single male was obtained on 6 September 1963, at Lake Nakuru (0° 15′ S, 36° 05′ E), and lasts for just over one minute.

RESULTS

In both species one bird, presumably the male, dominated the singing and always initiated the duet sequences. Although there are marked differences

Fig. 1

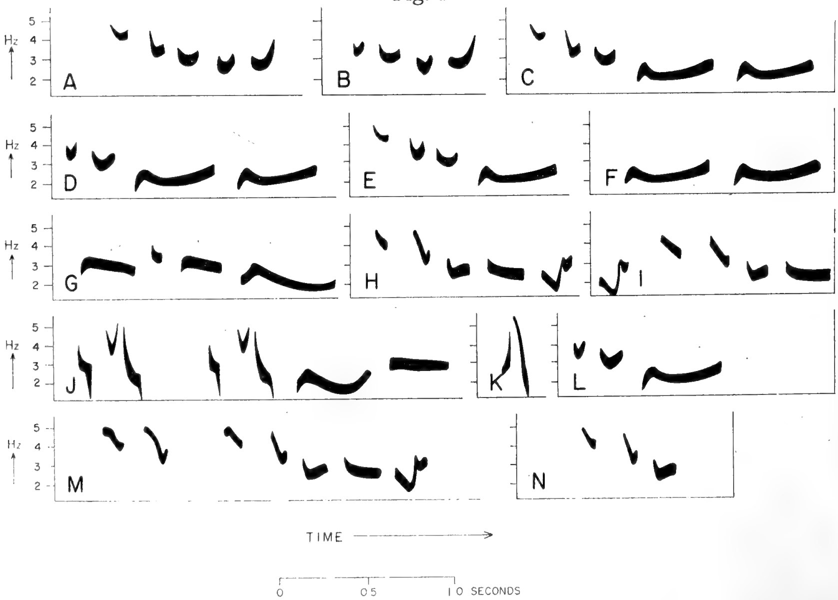


Table 1. The analysis into phrases of the song of two duet sequences of *Hypergerus atriceps* recorded in southern Ghana. The bar over the syllables indicates the occurrence of duetting and the underlined sections have been reproduced as spectograms.

DUET SEQUENCE (1)	J H H H H H H H H H H M H H H H H H H H H N [1·2 Sec] K D D B A C B A A A C B A A C B A A
	A C B C B C B A A C B A A C B A A C B C B C B A C D B A C B C B C B C D B A C D B C B
	C D B C D B A C B A A C D L [1·6 Sec] F B C B C B A C B C B C D D B A C D [2·2 Sec] F B A A C
	B E A C B C D D
DUET SEQUENCE (2)	G G G G G G G G G G G G G H H H H H H H [4·6 Sec] I I I I I I I I I I I I I I I I I I I

in the songs of the males, the second component which forms the duet is extremely similar in both species and is presumed to be given by the female.

The song of the male *Hypergerus* consisted of mixed combinations of song phrases (Figure 1 and Table 1) several of which are either slight modifications or incomplete forms of others: compare phrases B and N with A, phrases D, E and L with C, and I with H. Some phrases occur more frequently than others (A, B, C, H, G, and I), and in some sections the song sequence is a repetition of one phrase (G, H and I). The major drawback of the presentation in Table 1 (and Table 4) is that the time interval between the ending

Table 2. Typical values of the ratio of the time difference between the ending of a song syllable and the beginning of the next to the time difference between notes within the syllables of the song of *Hypergerus atriceps*. The time difference is in mm where 132 mm = 1 sec.

Syllable	Time difference ratio
A	16 : 12
B	16 : 12
C	20 : 15
D	19 : 15
E	16 : 14
F	16 : 18
G	19 : 13
H	22 : 21
I	12 : 14
J	14 : 12
K	13 : 5

Fig. 2

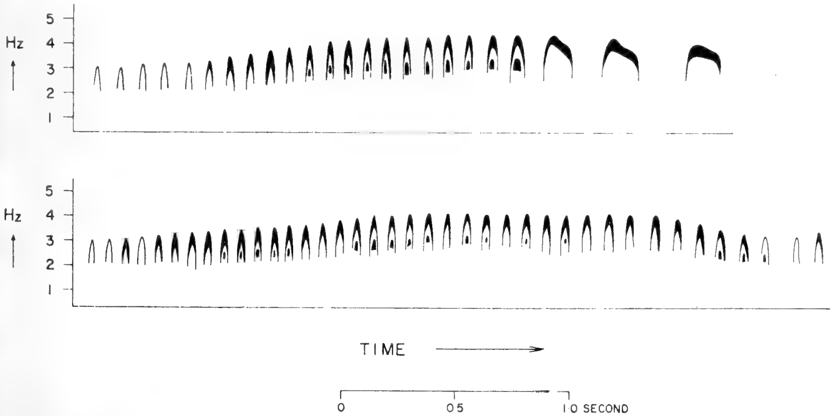
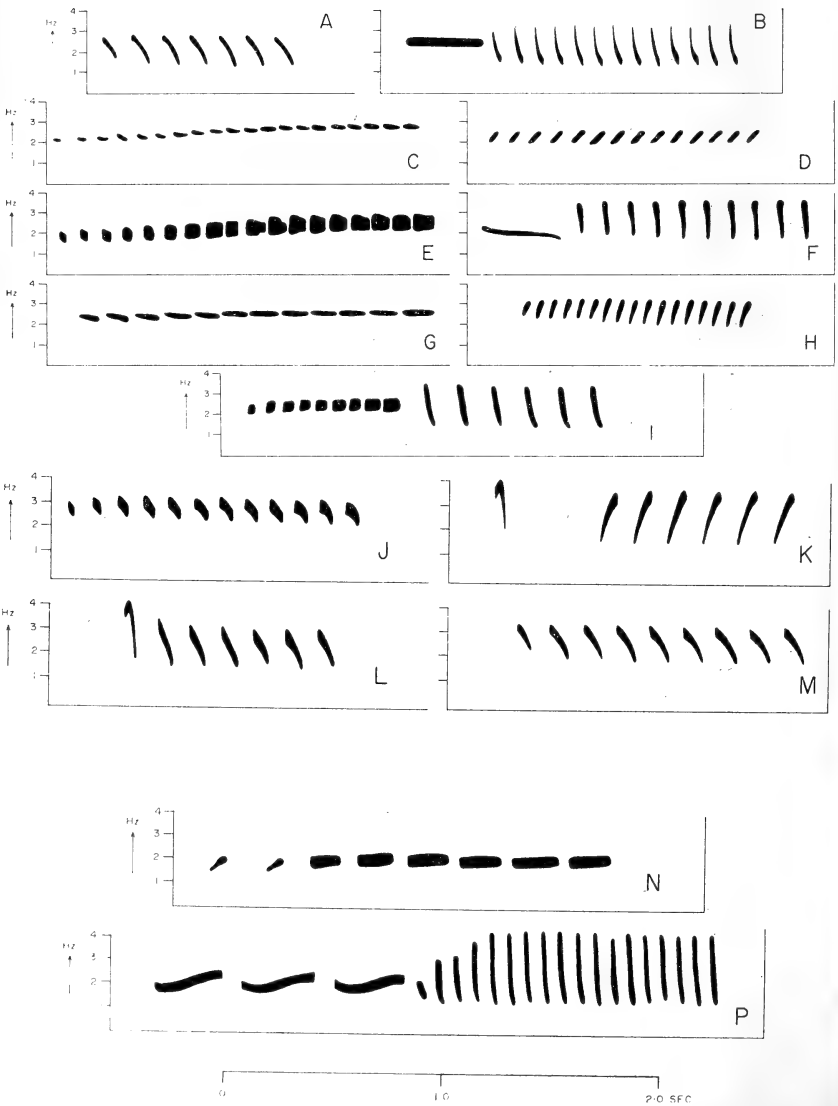


Table 3. The maximum trill rates (notes/sec) occurring in four examples of the female component of the duets of *Hypergerus atriceps* and *Eminia lepida*.

HYPERGERUS	*EMINIA*
11·7	17·0
12·4	18·2
10·4	18·3
11·7	17·8

Fig. 3



of a phrase and the beginning of the next cannot be represented. For *Hypergerus* these time intervals are only slightly greater than the time intervals between the notes in a phrase (Table 2). The result is that to the human ear the male song sounds regular and flowing.

The female component that forms the duet is a trill (Figure 2, Table 3) each note of which has a similar frequency/time profile. Generally, there is a slight increase in the trilling rate at the beginning of a duet and it then either remains constant during the rest of the trill or decreases as the trill component ends (Figure 2).

Only one recorded sequence of *Eminia* contained a combination of different song phrases. The rest were made up of repetitions of the same phrase (Figure 3 and Table 4). The time intervals between the song phrases vary from one to four seconds or more and are very much greater (approximately 20 ×) than the time intervals between the notes making up each song phrase. They are also longer than the lengths of the song phrases. As a result the male song is of a much different tempo and rhythm than the song of the male *Hypergerus*. However, the duet component is a trill (Figure 4), and in structure and tempo it is remarkably similar to that of *Hypergerus* (Table 3).

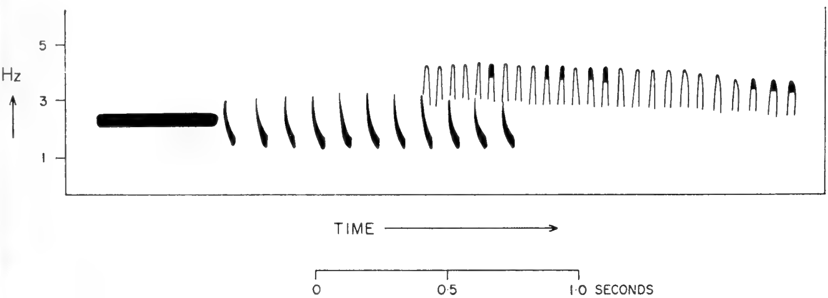
Table 4. The analysis into phrases of the song of two male *Eminia lepida* recorded in Kenya by the late Mr. Myles-North. The recordings are not continuous and the breaks are indicated by the vertical bars. The bar over the syllables indicate the occurrence of duetting and the underlined sections have been reproduced as spectograms. Two sections indicated (. . . . .) have not yet been analysed because of background calls from other species.

Recording at Gituru.
A A A A | A | ...... | B B B | B B | C C C C | C C C C C | D D D D D D | D D D D D | E E E E E E |
E E E E E E E | F F F F F F F F F | G G G G G G G G | ...... | H H H H H H H H H H H H H | I I I I

Section from record "Voice of African Birds"
I I I J K J J J K L M N | B B B B

Recording at Lake Nakuru
N N N N N N N N N N N N | P P P P P P P

Fig. 4



OTHER COMPARATIVE DATA

In both species the sexes are alike and the juveniles closely resemble the adults, more so in *Eminia* than *Hypergerus*. Following Chapin's key for the genera in the Sylviidae (Chapin 1953: 241) both birds have similar values

(0·33 — 0·66) for the ratio of the lengths of the two outermost primaries, they have a similarly shaped bill without a hooked tip, and both have relatively long tails. In both species males are larger than females. Details for *Hypergerus* are given in Table 5. Chapin (1953: 308) gives no details for

Table 5. The physical dimensions (in mm) of *Hypergerus* and *Eminia*. The number of specimens used are given in brackets after the sex symbol.

		Hypergerus		
Source	Sex	Wing	Tail	Tarsus
Bates (1930)	♂ (4)	84–87	94–102	27–30
	♀ (3)	77–82	83–94	
Bannerman (1936)	♂ (5)	83–88	91–99	28–30
	♀ (8)	76–82	81–92	27–28
		Eminia		
Reichenow (1905)	?	65–71	55–65	23–25

Eminia but mentions that males are consistently larger than females. The measurements for *Eminia* by Reichenow (1905: 615) are included in Table 5 for comparison, but unfortunately he neither includes sample size nor distinguishes between the sexes.

Both species breed in the wet season and both are probably double brooded. This is certain for *Eminia* (Van Someren 1956: 339) but not yet certain for *Hypergerus*, although the observations of Lang (1969) suggest this. Old nests may be reconditioned and used again in both species.

The clutch size is usually two eggs for *Eminia*, sometimes three. The two clutches known for *Hypergerus* had two and three eggs respectively. The eggs of *Eminia* are either pure white or pale blue or else have in addition some dark purple brown (reddish brown) spots. The two eggs of *Hypergerus* found by Lang (1969) were pale blue with reddish brown spots and blotches fairly densely distributed at the blunt end and scattered lightly over the rest of the egg. In both species the shape of the eggs is elongated oval; the ratio of length to breadth for *Eminia* being in the range of 1.44 to 1.59 and for *Hypergerus* 1.48 (only one egg measured).

The nests of the two species are remarkably alike, both resembling a large untidy sunbird nest and are not unlike those of the eurylaemid *Smithornis capensis* (R. K. Brooke *in litt.*). The nest site and materials used in construction are also similar. The details that follow are taken from Van Someren (1956: 377) for *Eminia* and from Lang (1969: 127) for *Hypergerus*. In *Eminia* the nest is an oversized untidy sunbird nest and is suspended from the end of a thin branch, usually overhanging water or a stream bed or else a small open space. The nest has a slight porch and the entrance is on the side near the top. Strips of bark fibre, grass and tendrils and long strands of moss make up the outside structure of the nest but all are loosely interlocked and the whole is so untidy that it looks like a mass of debris caught up on a thorny spray, or a collection of flotsam brought down in a flood and caught up by a overhanging branch. Finer fibres are used as a lining and a few feathers may be included.

In *Hypergerus* both nests were suspended from a hanging tendril overhanging a stream. The side entrance was situated near the top of the nest and there was a slight overhanging porch. Below the chamber of the nest hang an untidy mass of ragged grass ends. One of the nests was made entirely of fairly broad strips of dry grass which had collected as flotsam. The second

nest had, in addition, a few pieces of dried plant. Both nests had a lining of much finer grass.

The other genera in the Sylviidae have in general quite different nests and there appear to be only two species which have nests bearing any resemblance to a sunbird's. The first is *Sylvietta virens* (Chapin 1953: 257, 258) and the second is *Apalis pulchra* (Chapin 1953: 303). In both cases, however, the materials used are different from those used by *Eminia* and *Hypergerus*.

DISCUSSION AND CONCLUSION

Hall and Moreau (1970) describe the basic distributional patterns that may have given rise to past speciation in African passerines. They further describe what they call secondary distributional patterns in order to consider the effect of subsequent climatic changes on these species. Their secondary pattern relevant to the present discussion is one where the isolated species remain so and continue to diverge, even to a level at which they might well be classified as separate genera. Such a taxonomic situation could understandably arise when two such isolated species, one say in West Africa and the other in East Africa, are collected and described by different people or by a person such as Hartlaub who although he described *Eminia* was more familiar with West African birds than East African birds. This is especially the case when comparative data are lacking. Hall and Moreau (1970) list five examples in which they believe this type of isolation and divergence have occurred. These involve the Sunlark and allies (*Galerida modesta*), the Moustached Warbler and allies (*Sphenoaecus mentalis*), the Black-headed Stream Warbler and allies (*Bathmocercus cerviniventris*), the Barred Warbler and allies (*Cameroptera fasciolata*), and the Olive Sunbird and ally (*Nectarinia olivacea*). Such a situation also seems to apply to *Hypergerus* and *Eminia*, first collected and described respectively in 1831 and 1881. It appears that J. P. Chapin is the only person who has had the opportunity of comparing them both in the field. The impression he gained at Lagos, Nigeria, was that *Hypergerus* resembled an overgrown warbler. Although the beak, wings and tail were much more elongated in *Hypergerus* than in *Eminia* Chapin (1953: 309) considered there were many points of similarity but does not list them.

The similarities between the breeding behaviour of *Hypergerus* and *Eminia*, especially that of the nest site and structure, are much greater than would be expected if they are correctly placed in separate genera. Such similarities are rather to be expected between species placed in the same genus. On this evidence alone, therefore, there is some justification for recommending that they both be placed in one genus. This would appear even more justified now that it is known that both species duet and that the form of the "female" component in the duet is the same in both species. This approach does assume that the vocal characteristics being compared remain unchanged. Lanyon (1969) found such evidence for this in the dawn songs of the tyrannid flycatchers he studied but this is not available in the present study as only two species are involved. Nevertheless, it is proposed that *Hypergerus atriceps* and *Eminia lepida* be considered congeneric and be placed in the genus *Hypergerus*, the senior of the two names. It is also recommended that the vernacular name should be the Oriole Warbler adopted by Mackworth Praed & Grant (1973: 312).

SUMMARY

Hypergerus atriceps and *Eminia lepida* are placed in monotypic genera in the warbler family Sylviidae. They are allopatric species, *Hypergerus* being found

in West Africa and *Eminia* in East Africa. The nest of *Hypergerus* has recently been described and resembles in every way the nest of *Eminia*. Their duet structures are described and compared. Although the "male" contributions are different the "female" components of the duet are very much alike. These similarities, taken together with their present-day distributions, suggest that they had a common original population whose distribution was split. The isolates then diverged to produce two species so morphologically distinct as to suggest that they should be placed in different genera and even different families.

On the basis of the similarities in their nest, duet structures and some morphological proportions it is proposed that they be placed in one genus *Hypergerus*.

ACKNOWLEDGEMENTS

I thank Dr. M. Lock, L. Lock and R. K. Brooke for their helpful comments at various stages of the writing of this paper. Also I thank D. W. Lamm for making it possible for me to obtain the recording of *Eminia* from Cornell University.

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Status of the Great Shearwater in Trinidad, West Indies

by Charles T. Collins & Elisha S. Tikasingh

Received 19th January, 1974

The Great Shearwater *Puffinus gravis* was first recorded for the island of Trinidad by ffrench & ffrench (1965) on the basis of the skull of a bird found dead on an east coast beach in July 1960. Since this skull could not be found at the time of a review of the shearwater records for Trinidad and Tobago (Collins 1969) it was felt that some caution should be exercised in including the Great Shearwater in the avifauna of Trinidad until more conclusive specimen material had been obtained. The preservation of five specimens of this species obtained during June 1971 and 1972 now fully confirms the occurrence of the Great Shearwater in Trinidad waters. The details are as follows.

On 10 June 1971, an employee of the Trinidad Regional Virus Laboratory noticed a large number of dead and dying sea birds on Manzanilla Beach on the east coast of Trinidad. Unfortunately these were not reported until 18 June at which time the junior author went to the scene and obtained two birds. One of them was already dead and infested with maggots, while the second, although badly weakened, was still alive. These birds were later identified by the senior author as Great Shearwaters and subsequently prepared as museum specimens, now housed in the collections of the Trinidad Regional Virus Laboratory (TRVL 15891) and the American Museum of Natural History, New York (AMNH 804303; formerly TRVL 15892). At the time these specimens were obtained on 18 June, a rough estimate of forty additional dead and decomposing shearwaters, presumably all Great Shearwaters, were observed by the junior author on Manzanilla Beach.

During June 1972, three additional specimens of Great Shearwaters were obtained from Trinidad beaches. Single dead or dying birds were picked up on Matura Beach on 1 June by P. R. Bacon and on 10 June by G. Gibbs. The third bird, found on Matura Beach by Bacon on 12 June, was alive but unable to fly. These birds were later skinned by Bacon and R. ffrench and sent to the senior author for final preparation. Of the three, one specimen (CTC 974) has been presented to the collections of the British Museum (Natural History) (1974.2.1) and the remaining two (CTC 975 and 976) have been added to the collections of the Trinidad Regional Virus Laboratory and the American Museum of Natural History (AMNH 810475).

Dead and dying Great Shearwaters were also noted on Matura Beach on 10, 15 and 25 June 1973. Two specimens are preserved in the collections of the University of the West Indies, St. Agustine, Trinidad (P. R. Bacon in litt.).

The five specimens from 1971 and 1972 (four males, one female) were in fresh, nearly unworn, plumage showing no signs of moult of body or flight feathers. All showed a reduced amount of white on the rump and a larger brownish patch on the belly as compared with the large AMNH series. The reduced rump patch is due to the upper tail coverts being strongly mottled with brownish grey and having the white confined to the terminal edges.

Adult Great Shearwaters leave the breeding colonies in the South Atlantic during early April (Rowan 1952) and "winter" in the North Atlantic during which time (July–August) the annual moult of flight feathers begins (Palmer 1962). On the annual northward flight post-breeding adults would be in a recognisably worn plumage. Even on the breeding grounds the adults are so worn as to appear paler than the fresh plumaged young (Rowan 1952: 110). Thus it seems reasonable to assume that the fresh plumaged birds recovered in Trinidad in June are all young of the year which had only recently left the breeding grounds. No mention has been made by previous authors of the reduced white on the rump of juveniles although it has been suggested (Bannerman 1959) that the belly patch is more prominent in juveniles than in adults. Further observations made on the breeding grounds are needed to confirm these plumage differences.

As noted earlier (Collins 1969) the appearance of the Great Shearwater in Trinidad waters is not unexpected in that there seems to be a regular northward movement of this species in the western Atlantic and eastern Caribbean (Voous & Wattel 1963; Metcalf 1966; Rowan 1952; Hawkins 1963). More recently (19 June 1971) a specimen of this shearwater was obtained further

to the west in the vicinity of Isla Carenero, Islas Los Roques, Venezuela (Phelps 1972). Since only juveniles have been obtained in Trinidad to date it suggests a separate migratory route for adults and juveniles as has been previously noted for the Manx Shearwater *Puffinus puffinus* (Post 1967). However, further observations are needed to exclude the possibility that the adults which leave the breeding grounds (early April) one or two months before the young (mid-May to early June) (Rowan 1952) pass through this area at an earlier date.

Mallophagan ectoparasites were abundant on all specimens and ticks were noted in the ear passages of several. The lice from the two 1971 specimens were identified by Theresa Clay as *Halipeurus gravis* Timmermann 1961, *Trabeculus hexacon* sens. lat. (Waterston 1914) both of the family Philopteridae and *Austromenopon paululun* (Kellog & Chapman 1899) of the family Menoponidae. A single female specimen of a species of *Saemundssonia* was also collected from one bird. The ectoparasites from the later specimens have not yet been identified.

Mass mortalities, particularly of juveniles, similar to that noted on Manzanilla Beach in June 1971, have been previously recorded for this and other species of shearwaters. The most recent account is that of Watson (1970) documenting the death of hundreds of mainly juvenile Great Shearwaters along the east coast of the United States in early June 1969. The causes of juvenile mortality are unknown although storms at sea, bacterial or viral infections, and the effects of accumulations of organochlorines have all been suggested. None of these effects could be implicated as the cause of the deaths recorded by Watson (1970). Similarly, only low levels of polychlorinated biphenyls were recorded in two of the Great Shearwaters recovered in Trinidad in 1972 (Bourne & Bogan 1972) and no arbovirus was isolated from a single bird tested in 1971. The ticks recovered from these birds were not tested for arboviruses. It should be noted that two of the males obtained in 1972 weighed 385 and 447 g or 44 to 51 percent of the average weight of adult males (Hagen 1952, in Palmer 1962). The birds reported by Watson also thin, devoid of fat, and were only about 60 percent of normal adult breeding weight. Such low weights are probably associated with the cause of death rather than age as young shearwaters outweigh adults as nestlings. The actual cause of death however remains a mystery.

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Butastur and *Buteo* east of Wallace's Line

by C. M. N. White

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Brown & Amadon (1968, *Eagles, Hawks and Falcons of the World:* 540) give the range of the Rufous-winged Buzzard Eagle *Butastur liventer* as extending east of Wallace's Line in Indonesia to Celebes, Banggai and Sula Islands. This requires amendment. All the evidence indicates that this species is or was common in the south west peninsula of Celebes north to its base at Oeroe and Palopo (there are eight skins in the Zoological Museum, Bogor, the most recent dated 7 November 1912, according to Lord Medway *in litt.*), but it is not recorded elsewhere in the island. On failing to trace any published records from Banggai and Sula, I asked Dr. Amadon why these islands were included in the range. He informed me that the source was a manuscript prepared by the late Dr. E. Stresemann in anticipation of a new edition of the first volume of Peters' *Check List of Birds of the World*, and that he did not know the basis of Stresemann's statement. Stresemann set out the range of *B. liventer* in 1940 (*Journ. Ornith.:* 477) but does not include these localities. Nor does van Bemmel include the species in his list of birds of the Moluccas (1948, *Treubia*, 19: 323–402) which covers Sula but not Banggai. It seems certain that the locality Banggai must be an error, for Dr. S. Eck of the Staatliches Museum für Tierkunde, Dresden, who is shortly to publish a list of the birds of Peleng and Banggai, has kindly informed me that he knows of no record of *B. liventer* from these islands. There are no specimens from Sula in the American Museum of Natural History, New York (Mrs. M. LeCroy *in litt.*) nor in the Leiden Museum (Dr. G. F. Mees in *litt.*). J. J. Menden collected at Taliaboe in 1938, but his collection, now at the Museum of Comparative Zoology, Harvard, does not include this species (Dr. R. A. Paynter *in litt.*). Unless this note elicits new information Sula should therefore also be deleted from the range.

Mentioned by Stresemann (1940) but not by Brown & Amadon (1968) is a record from Timor of a specimen of *B. liventer* obtained by S. Müller sometime between 1826 and 1837. It is an old mounted bird in the Leiden Museum and was listed by Schlegel (1862, *Mus. Pays Bas, 2, mon. 6*, Buteones: 21–22) and mentioned by Meyer & Wigglesworth (1898, *Birds of Celebes:* 49–51). There is no record otherwise from either Timor or any other of the Lesser Sunda Islands of any *Butastur*. As Müller collected in south west Celebes and actually obtained *B. liventer* there, there is a possibility of an error in labelling to account for the Timor record, but Dr. Mees informs me that Müller's localities are usually reliable. Hellmayr (1914, *Die Avifauna von Timor*) and

Mayr (1944, *Bull. Amer. Mus. Nat. Hist.*, 83, art. 2) both ignore the Timor record. As *B. liventer* has a peculiarly fragmented distribution, the old record from Timor should not be lost sight of although it needs confirmation.

The Timor record seems inadvertently to have been the basis of citing that island in the winter range of the Grey-faced Buzzard Eagle, *B. indicus*, by Vaurie (1965, *The Birds of the Palearctic Fauna*—Non Passeriformes: 180). This species winters in islands east of Wallace's Line but only in the north (Talaut, Sangihe, Siao, north Celebes, Morotai, Halmahera, Ternate and Western Papuan Islands).

The Steppe Buzzard, *Buteo buteo vulpinus*, has once been reported from north Celebes, for Meyer & Wiglesworth (1898: 51) under the name *B. desertorum* state that there is a specimen in the Leiden Museum so labelled and collected by von Faber in 1883. Stresemann in listing the migrants recorded from Celebes (1941, *Journ. Ornith.*: 69–100) ignores the record, either through overlooking it or because he thought it unreliable. Von Faber did collect in northern Celebes and Mees (1971, *Zool. Meded.*, 45: 228) has reported specimens of *B. b. vulpinus* in the Leiden Museum from Perak, Malaya and from Java, so that a record from Celebes is not impossible. But Dr. Mees kindly informs me that there is no such specimen from Celebes in the Leiden Museum nor do the records provide any evidence that there ever was one. The statement by Meyer & Wiglesworth cannot be accepted.

The classification of Tristram's Storm-petrel *Oceanodroma tristrami* Salvin

by W. R. P. Bourne

Received 16th April, 1974

While Wagstaffe (1972) performed a useful service in locating and confirming the identity of the type of *Oceanodroma tristrami*, it should perhaps be pointed out that he seems to have overlooked a review of this form and its allies by Austin (1952). The latter points out that it is a member of a group of four very similar large, dark, fork-tailed storm-petrels which replace each other in different parts of the Pacific, in which the two occurring over warm water have generally brownish plumage and the two occurring over cooler water are bluer. He considers that since each shows some distinct character they should all be treated as distinct species, including in addition to Tristram's Storm-petrel *Oceanodroma tristrami* (pale wing bar, north-west Pacific), Matsudaira's Storm-petrel *O. matsudairae* (pale primary shafts, west tropical Pacific), the Black Storm-petrel *O. melania* (long tarsus, east tropical Pacific) and Markham's Storm-petrel *O. markhami* (short tarsus, south-east Pacific). I have also suggested (in Palmer, 1962) that the extinct large white-rumped Guadalupe Storm-petrel *Oceanodroma macrodactyla* of the north-east Pacific may also have belonged to the same group, showing a greater development of the tendency to paleness of the rump also seen in *O. tristrami*, although of course like other members of the group it could well have evolved independantly from the main body of smaller storm-petrels.

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Rufous-bellied Heron in Kenya

by Laurence C. Binford & Dale A. Zimmerman

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On 15th October 1973, we observed and photographed a Rufous-bellied Heron *Butorides rufiventris* (formerly *Erythrocnus*; see Smithers *et al.* 1958) at the edge of Loginya Swamp in the Amboseli Masai Game Reserve, approximately 2·5 km southeast of the new Amboseli Lodge along the Ol Tukai-Kilaguni road. Colour transparencies (on file in the National Museum, Nairobi) were obtained with a 450 mm lens and also through a tripod-mounted, × 20 telescope. Although of rather poor quality, these photographs are clearly representative of the species. Despite the misleading map in Mackworth-Praed & Grant (1952), *B. rufiventris* apparently has not heretofore been reported from Kenya. Williams (1964) and Forbes-Watson (1971) include only Uganda and Tanzania within its East African range.

The heron was feeding in shallow water between 70 and 80 metres from the road, and we observed it for some thirty minutes with the telescope and with 8 × 50 and 8 × 40 binoculars. Twice during this period it flew for very short distances, settling again into the shallow water. Feeding nearby were Squacco Herons *Ardeola ralloides*, Black-winged Stilts *Himantopus himantopus*, Long-toed Lapwings *Hemiparra crassirostris*, several sandpiper species, and some Yellow Wagtails *Motacilla flava*.

The Rufous-bellied Heron appeared to be slightly smaller than a Squacco Heron and larger, stockier, thicker-necked, and heavier-billed than a Green-backed Heron *Butorides striatus*. Its outline was unique and readily distinguishable from that of the commoner heron species. The crown and sides of the head were recorded by us as medium bluish-grey, merging to darker slate-grey on the neck and upper back. The lower back was dark brownish-grey. The throat and a continuing short streak down the upper neck were whitish. The tail, upper tail covers, belly, and at least part of the crissum were conspicuously rufous, the tail colour showing especially well in flight. There was considerable rufous on the wings as well.

Soft part colours in this species vary. Jackson (1938) wrote of the adult, "Iris bright yellow, bare skin round the eye yellow; bill black, basal half yellowish-white; feet dusky yellow". Chapin (1932) recorded a female with " . . . orbit greenish yellow; beak black above, changing to greenish yellow on the lower part; feet lemon yellow". Our bird exhibited the following colours: a narrow line (presumably bare skin) around the top and rear of the eye white; bare lores pale yellowish-white; irides pale yellow; bill blackish with basal two-thirds of the lower mandible dusky orange-yellow; feet bright orange-yellow.

After leaving the site of this observation and motoring a few hundred metres along the marsh edge, we encountered Mr. W. G. Harvey, who showed Zimmerman a second Rufous-bellied Heron. It was similarly plumaged to the one described above but possessed a more obviously streaked foreneck and perhaps a slightly paler dorsum.

B. rufiventris appears to be uncommon or rare everywhere in East Africa, where the majority of records are from Lake Victoria. The Amboseli Masai area, with its marshy expanses, would seem a logical place for wandering or migrating individuals to occur. Possibly they have been overlooked heretofore.

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Geographical variation in iris colour in the bulbul *Andropadus milanjensis*

by R. J. Dowsett

Received 15th February, 1974

The Stripe-cheeked Bulbul *Andropadus milanjensis* (Shelley) is a species of the montane forests of eastern Africa. It is apparently most closely related to *Andropadus tephrolaemus* (Gray), but in the few localities where the two are geographically sympatric *milanjensis* occurs at a lower altitude than *tephrolaemus* (C. W. Benson *in litt.*). Moreover *milanjensis* may make some seasonal movements to lower levels still. In August Benson (1937) found it numerous in riparian scrub at 1,370 m in the Misuku Hills in northern Malawi, but not at all in the larger areas of forest at 1,830 m. Yet in October I found this species in breeding condition and common in the Misuku forests at 1,830 m and above. Specimens from Mlanje in southern Malawi were collected by Benson (*in litt.*) from July to September from as low as 760 to 1,220 m. *A. tephrolaemus* is less confined to the forest interior than is *milanjensis*, although the latter is at times found in very thin riparian growth. *A. tephrolaemus* is often on the edge of high altitude forest, even in isolated trees in adjacent grassland. The relationship between these two species is discussed by Hall & Moreau (1970).

Three subspecies of *A. milanjensis* are recognised by White (1962), and in addition Clancey (1969) has described *disjunctus* from eastern Rhodesia and adjacent Moçambique. Most of the Tanganyika-Nyasa montane group is occupied by *olivaceiceps* (Shelley) (type locality: Chiradzulu, southern Malawi). This race ranges from Cholo in southern Malawi east of the Shire rift, north-westwards to the Rungwe area of south-western Tanzania. It is replaced by *striifacies* (Reichenow & Neumann) (type locality: Marangu in north-eastern Tanzania) from the Iringa area, northwards. Within its range *olivaceiceps* is local in distribution, being absent from several montane forests for no known reason (see Benson 1953). In north-central Malawi, between Nchisi and the eastern escarpment of the Nyika Plateau, there is but one record, a specimen collected at Mwanjati on the southern Vipya Plateau (Benson 1951). Although Benson (1953) did not indicate it, he (*in litt.*) believes the species to be absent from the Vipya (see also Benson 1941, *Ibis* (14)5: 55–Ed.), which he knows well, except in the extreme south. It is apparently absent from Dedza, Chongoni and Dzalanyama in central Malawi, although present on the equally small Chirobwe Mountain (Benson *ibid*).

Within the subspecies *olivaceiceps* the colour of the iris of adults appears to be either yellowish (pale) or reddish (dark). Adults collected from Cholo in southern Malawi north to Nchisi in central Malawi all have irides described by the collectors as a shade of yellow or yellowish-white. On the other hand adults from the Nyika Plateau and Misuku Hills in northern Malawi all have irides a shade of umber or chestnut. The Table summarises the iris colour

TABLE

Iris colour in adult *Andropadus milanjensis olivaceiceps*

Area	Colour	Sample
Misuku Hills	pale salmon, brick	5♂♂, 1?
Nyika Plateau	pale reddish brown	1♂
Nchisi Mt.	yellowish, pale yellow	1♂, 1♀
Chirobwe Mt.	pale yellow	1♀
Mangochi Mt.	yellowish-white, pale yellow	10♂♂, 1♀
Zomba Plateau	pale yellow	1♀
Chiradzulu Mt.	pale yellow	1♂
Soche Mt.	pale yellow	1♂
Cholo Mt.	naples yellow, yellowish brown	2♂♂

recorded for adult specimens in the British Museum at Tring (kindly examined for me by C. W. Benson) and of recent specimens collected by me for the Livingstone Museum in Zambia. It will be seen that the differences demonstrated cannot be sexual; neither can they be seasonal, as shown by series collected by me in October from Mangochi Mountain (10, yellow irides) and the Misuku Hills (5, near brown irides).

Specimens from northern Moçambique (Namuli Mountain) and eastern Rhodesia (Chirinda, Mt Selinda) have brownish irides. Both populations are attached to the nominate race by White (1962), but the Rhodesian birds are what Clancey (1969) has called *disjunctus*. More than 30 *disjunctus* collected by Mr. P. A. Clancey all had umber brown irides (R. K. Brooke *in litt.*). The iris colour of the type specimen of *A. milanjensis* from Mlanje was not recorded by the collector, but two adults and a juvenile from the same area, collected by Benson, have irides pale grey. *Striifacies* from the following localities also have the iris recorded as grey on the labels of specimens in the British Museum: Chyulu Hills, south-eastern Kenya; Moshi, Kilimanjaro; Monduli Mt., northern Tanzania. On the other hand one specimen from this last locality has the iris labelled "brown", and one from Kilomeni in the North Pare Mts. as "yellow". Hall & Moreau (1970) refer to northern birds as having yellow or pale eyes. Unfortunately further specimens labelled with iris colour are not available, and the situation in the northern populations (i.e. *striifacies* and *olivaceiceps* north of the Misuku Hills) requires further investigation. Juvenile birds from eastern Rhodesia (Vumba 1) and northern Malawi (Mwanjati, southern Vipya 1; Nyika 1) have irides respectively greyish-brown, brownish-yellow and pale grey-brown. The iris colour of adults at Mwanjati on the southern Vipya is not known, but this area is between the known extremes of brown (Nyika) and yellow (Nchisi).

There are no apparent differences in plumage colours between these two groups of *olivaceiceps*. There may be a difference in average size, as suggested by the following weights and measurements of my own Mangochi and Misuku samples, but further data are required to confirm this:—

	n	Wing (mm)	Tail (mm)	Weight (g)
Misuku Hills	4	97–100 (99·0)	92–94 (93·0)	40·9–46·5 (44·0)
Mangochi Mt.	7	95–101 (97·7)	85–92 (89·3)	37·0–43·5 (40·0)

These data are of adult males only, all of which had enlarged testes.

The existence of two, apparently consistent, iris colour groups within the subspecies *olivaceiceps* suggests that these populations are genetically different. Although these differences cannot be noticed in preserved skins they are likely to have an important biological basis. A specimen from the type locality of *olivaceiceps* (Chiradzulu) has yellowish irides, and therefore the northern populations of brown-eyed birds may need to be recognised as subspecifically distinct. But I do not intend at this stage to present a new subspecific name. Clearly a detailed study of iris colour throughout the range of *A. milanjensis* will be necessary to determine the significance of the observed differences.

Although the Shire rift in southern Malawi restricts the distribution of several montane birds, to the extent that Dowsett (1971) has separated the mountains east of the rift into a South-eastern montane group, this is not the boundary between the two populations of *olivaceiceps*. However, the apparent gap between the two groups occurs at another natural geological break: Nchisi Mt. (13°25′S.) and the southern Vipya Plateau (12°40′S.) are separated by some 110 km of low country, mostly below 910 m altitude. In particular the valleys of the Bua and Dwangwa Rivers are likely to have formed effective barriers to montane bird dispersal for a long period in recent time.

Acknowledgements: I am most grateful to C. W. Benson for examining specimens at the British Museum, Tring, on my behalf, and to the staff there for their usual kind co-operation. My thanks go to R. K. Brooke, P. A. Clancey and M. P. Stuart Irwin for useful comments on this problem.

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The status of the cormorants *Phalacrocorax carbo lucidus* and *Phalacrocorax carbo patricki*

by Emil K. Urban & T. G. Jefford

Received 11th February, 1974

Cormorants are common along the Kazinga Channel in Uganda's Ruwenzori National Park. Some adults there have black underparts except for white which extends from the cheeks and throat along the entire front of the neck to the upper breast; this description corresponds to that of *P. c. lucidus* (Lichtenstein), the White-necked Cormorant of sub-Saharan Africa. Also occurring along the Kazinga Channel are individuals of *P. carbo* which have the white restricted to the throat while the neck and upper breast are black

and still others whose feathered parts are wholly black. Black-necked individuals with white throats resembling *P. c. sinensis* (Shaw) were described by Williams (1966) as a distinct subspecies of *carbo*, *P. c. patricki*. He suggested that the white-necked form of sub-Saharan Africa should therefore be known as "*Phalacrocorax lucidus lugubris* Rüppell, not *P. carbo lugubris*" (=*P. c. lucidus* in White 1965).

Williams's observations therefore indicate that in the Kazinga Channel there are two distinct sympatric species of large cormorants—one with a white neck, the other with a black neck. Our observations, however, show that there are intermediates of all types between the forms described by Williams as *patricki* and *lugubris*; some of these forms are depicted in Figure 1 and numbers of birds assigned to four categories based on the extent of white plumage from the head towards the belly are given in Table 1.

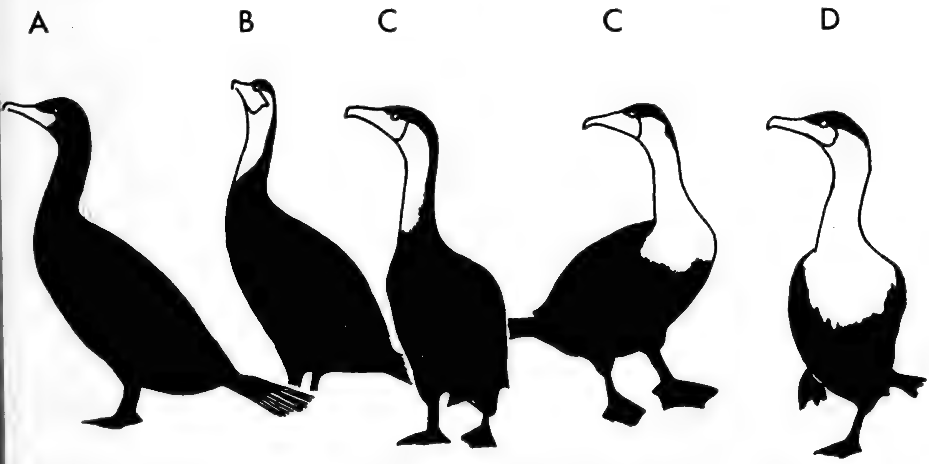

Figure 1. Several cormorants drawn from 35 mm slides taken at Kazinga Channel, showing variation in throat and neck plumage from all black to white extending from throat along neck onto upper breast. Individuals A, B, C & D are referred to in Table 1.

TABLE 1

Counts of the plumage types of cormorants from the Kazinga Channel, Uganda. Birds with black bellies were assigned to the appropriate categories, with the results given in this table. Representatives of these categories are shown in Figure 1. Birds with white bellies are immature, and were not included. Category: A, no white on throat and neck; B, throat and less than ½ neck white; C, throat and ½ to all neck white; and D, white extending beyond neck onto upper breast.

Category	A	B	C	D
Number of individuals	27	29	45	18
% of total counted	22·7	24·4	37·8	15·1

Williams's assignation of the black-necked birds to *P. c. patricki* and the white-necked birds to *P. lucidus lugubris* was made because he saw no cormorants with intermediate plumages and because the black-necked birds which he collected were in breeding condition. It would be reasonable to assume therefore that the *patricki* birds breed with one another, rather than with *lucidus* birds. However, M. P. L. Fogden (pers. comm.) has since observed that at a nesting colony at Lake Murabyo (0°05′S, 30°02′E) within

the Maramagambo Forest in the Ruwenzori National Park, the black-necked and white-necked birds pair without any apparent regard to the amount of white on the neck of the partner.

Cormorants with various amounts of black and white plumage on the neck have been reported from other parts of eastern Africa. Chapin (1932) reported that some specimens of *P. carbo* from eastern Zaire and Lake Victoria (Bukoba, Tanzania) have white more restricted to the upper fore-neck than does typical *lucidus*. Reichenow (1892a, 1892b) described a specimen from Bukoba as *P. gutturalis,* now synonymous with *P. carbo* (Sharpe & Ogilvie-Grant 1898; Peters 1931), whose neck colour is white mixed with black which extends only to the black upper breast. On 31 July 1970 we saw a nesting adult at Lake Abiata, Ethiopia, whose throat, cheeks and upper third of the neck were white while the lower two-thirds of the neck were black flecked with a few white spots. A. Kortlandt (pers. comm.) has seen *P. carbo* at a breeding colony near Bukavu on Lake Kivu (Zaire) with neck colours either black or white. Lippens (1938) reported *P. carbo* at Lake Edward (now Idi Amin Dada) in Zaire, with neck colours varying from all white to all black, with white in the latter restricted to the throat. At Ishango, where the Semliki River drains from Lake Edward, both black-necked and white-necked forms are present, but the former are in a pronounced majority (K. Curry-Lindahl pers. comm.; see also Curry-Lindahl 1961: 146–149).

Thus, the cheek, throat and neck plumage of *P. carbo* in parts of eastern Africa may vary from individual to individual, ranging from all black to all white. Apart from the estimate given in Table 1, we are not aware of any figures from which the proportions of the various forms in different populations can be estimated nor if proportions within the populations are in equilibrium or are changing. However, it may be stated that the black-necked form is centred in western Uganda and eastern Zaire, although the white-necked form always seems to be present as well, and that the amount of black in forms with black and white becomes progressively less the farther individuals are found from this part of Africa.

We suggest that the black/white-necked cormorants in eastern Africa represent variations in plumage within a single species, *P. carbo* (*lucidus*), and not two species, *P. lucidus* (*lugubris*) and *P. carbo* (*patricki*), as proposed by Williams (1966). We do so because of the following reasons: (1) we know of no evidence of any "pure" breeding populations of *patricki*; (2) where black-necked and white-necked forms occur together, there is a whole series of variants from those with all black necks through various intermediate stages to all white necks; (3) in entirely white-necked forms, even when there are no black-necked forms present, there is variation in the amount of white which extends toward the black belly; (4) rare individuals with partly black necks occur in breeding populations of *P. carbo lucidus* as far away as Ethiopia; and (5) variation in plumage within a species is not uncommon in the genus *Phalacrocorax*. For example, in New Zealand *Phalacrocorax melanoleucos* (Vieillot)[1] has mixed forms at the breeding colony, varying from birds with a black under surface to those with a white one (Oliver 1955). A similar situation occurs in *P. carunculatus chalconotus* (G. R. Gray)[1] in that breeding populations in New Zealand and associated islands have 'two distinct colour phases' (Oliver 1955). The variation in plumage of the New Zealand and the eastern African cormorants indicates that at times it is no simple matter to separate species within the genus *Phalacrocorax*.

[1] See footnote at end of text.

The nature of the selective pressures which might establish and affect these variants in eastern African cormorants is obscure. Interesting questions arise. For example, a variety of birds which prey on aquatic animals, e.g. fulmars, boobies, herons, egrets and skuas, exhibit light and dark phases; the maintenance of these different forms has been ascribed to different efficiency in different feeding situations (Simmons 1972). Is this also a factor in the case of black/white-necked cormorants of eastern Africa? Also, why are the black-necked forms concentrated largely in western Uganda and eastern Zaire? Is this darker stock a relic of colder, wetter periods in the past when *carbo* in Africa may have been like the black-necked populations of *carbo* in the Palearctic of today? Furthermore, why do most *carbo* in sub-Saharan Africa today have white necks? Did possession of white plumage on the neck evolve largely as an advantageous response to heat stress at the nesting colonies as our studies in Ethiopia suggest (Jefford & Urban in prep.)?

It is clear that the resolution of these questions requires much more detailed data on the distribution of the various forms and on their juvenile and breeding plumages, and the correlation of these data with environmental factors and the biology of the birds. It seems equally clear to us that based on such information as is now available, there is no justification for removing *lucidus* from the species *P. carbo* nor for describing the black-necked form as the subspecies *patricki*.

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[1] We follow Peters's (1931) specific and subspecific classification in which the species *melanoleucos* is divided into two subspecies, *melanoleucos melanoleucos* and *melanoleucos brevirostris* (Gould). Oliver (1955) however lists *melanoleucos* and *brevirostris* as separate species or in his words 'semispecies'. Also he separates Peters's (1931) *P. carunculatus chalconotus* into two forms or 'semispecies', *P. huttoni* and *P. chalconotus*.

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Relative Biomass of Ethiopian and Palaearctic Passerines in West Kenya Habitats

by Peter L. Britton

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The problem of the accommodation in Africa of vast numbers of migrants from the Palearctic region has attracted considerable attention during the last two decades, mainly through work and stimulus of the late R. E. Moreau. The various carefully considered estimates given by Moreau (1972) for the total mean number of migrants supported by sub-Saharan Africa range from 1600 millions to 3750 millions. Impressive though these figures are, they represent only one or two birds per hectare in the approximately 20 million km^2 involved, assuming a uniform distribution throughout the reception area. It is now well known that African evergreen forest (except the edges) and montane areas are mainly avoided by migrants, so that favoured habitats would be expected to contain a far greater density; and the geographical distribution of migrants in Africa is far from uniform, with the northern tropics receiving far more species than areas further south. Pearson (1972) found as many as 75 wintering Palearctic passerines per hectare in lake side vegetation near Kampala, southern Uganda, but as few as 2 – 5 birds per hectare in cultivated bush away from the lake. Morel (1968) estimated only one or two wintering Palearctic passerines per hectare in Senegal thornbush.

Moreau (1972) has shown that about 20 per cent of the African non-forest avifauna consists of immigrant species. Bearing in mind that there are virtually no granivorous species involved in the immigrant avifauna, the figure is increased, for example to 26 per cent of the non-granivorous, non-forest avifauna in the northern tropics. The data in Morel (1968), for Senegal, yield a still higher figure, with 35 per cent of all species in his study area of Palaearctic origin. Such an analysis by species is far from satisfactory in assessing the impact of the immigrant avifauna, and Moreau had to admit that "of the comparative numbers of individuals we know nothing". And referring to the figure of 26 per cent above: "with no knowledge of the number of individuals involved it would of course not be justifiable to conclude that in this part of Africa one quarter of the food available other than grain is diverted to the migrants".

As residents of western Kenya from September 1968 to December 1972, my wife and I netted and ringed large numbers of birds in various west Kenya habitats. Some of these data permit valid estimates to be made of the relative numbers of Ethiopian and Palaearctic passerines. Data from netting are preferred to visual counts, since estimates are more objective and avoid the conspicuousness factor. Naturally, some species avoid capture more readily than others, and species which normally forage more than about 3 m from the ground are seldom captured. In forest habitats it is evident that only forest undergrowth birds are sampled using this technique, but this is not a serious problem in the other habitats discussed, there being comparatively little vegetation above net height. A large number of Palaearctic passerines are ringed annually in East Africa, but most are captured in such a way that no useful comparisons with Ethiopian species can be made. In the main, sites known to be especially prolific in migrant species at a particular time are worked, but there is virtually no netting between May and August. For valid comparisons there must be no such Palaearctic bias.

Between September 1971 and November 1972, a census was conducted in

four habitats in Siaya District, Central Nyanza, mainly using mist-nets, but also counting birds present in the study plot. One visit a month over the fifteen-month period was made to each plot. The same nets were set in the same sites within each plot on each visit, and were set for the first four hours of daylight each time. All mornings were calm, and dry so that any variation in totals captured as a result of varying weather conditions was minimal. With nets set only once in a month, net shyness did not apparently reduce totals (see Table 1). Three of the plots were one hectare in size, but the more open acacia area was two hectares. The quantity of netting used in each area was the same (300ft., ca.90m). Table 1 shows monthly passerine captures; Table 2 shows the totals of species recorded during the study period, visually or otherwise; Table 3 shows passerine captures in October–November, when Palaearctic migrants were on southward passage; and Table 4 shows winter data, for December–January only, including data from forest areas (see below). Granivorous species (taken to include all Fringillidae, Estrildidae, Ploceidae) are excluded from Tables 3 and 4. Biomass data are based on individual weights of all birds caught, recorded on Pesola spring balances. Drawing on the census results two longer papers are in preparation on detailed aspects of the papyrus and savanna avifaunas.

It is evident from Tables 1–4 that, of the four habitats worked, the thicket and acacia habitats are the most important for Palaearctic migrants. But even here, counts or estimates of Palaearctic passerines per hectare, aerial feeders excluded, never exceeded 30 birds at times of passage, 15 birds in winter. Large stands of *Cyperus papryrus* form a remarkably homogenous habitat with a highly specialized resident avifauna and an extremely low avian species diversity index (Britton in prep.). Palaearctic species feed along the edges but hardly penetrate the interior. The six birds netted in papyrus in December 1971 were feeding in an area which had been cleared and planted with cabbages during an exceptionally dry period. These figures are atypical and are excluded from Table 4, in which only three of the study plots are included. The habitat termed cultivation in Tables 1–4 is a heterogeneous habitat, which includes overgrown farmland, remnant thicket and streamside vegetation. It is especially rich in granivorous species. The two habitats favoured by Palaearctic species are:

(a) thicket, mainly secondary growth but impenetrable, including about 30 per cent introduced *Lantana camara*, intermixed with indigenous vegetation; altitude 1450 m. Eighty per cent of vegetation is 3–4 m high with only occasional trees as high as 6 m. Apart from the *Lantana*, dominants are *Vangueria acutiloba*, *Combretum molle*, *C. binderianum*, *Albizia coriaria*, *Bridelia micrantha*, *Vitex doniana*. *V. fischeri*, and others.

(b) well-grazed, seasonally inundated *Acacia seyal* savanna, altitude 1200 m. Trees up to 4·5 m but seldom taller than 2·5 m, with a density ranging from about 35 to 65 trees per 1000 m².

Moreau (1970) and Pearson (1972) have mentioned the importance of introduced *Lantana* berries as a food for Palaearctic migrants in Africa, in particular for the Garden Warbler *Sylvia borin*. During October and November, 60 per cent of non-granivorous birds (50 per cent of biomass) in the thicket plot were of Palaearctic origin (see Table 3). Virtually all were *S. borin* and their faeces contained little else except *Lantana* berries. In December and January the percentage of Palaearctic birds was reduced to 27 per cent (25 per cent of biomass), also mainly *S. borin* (Table 4). December-January figures for other habitats, including forest undergrowth, range from 2 to 19 per cent of individuals, 1 to 11 per cent of biomass (Table 4).

TABLE 1

Monthly passerine captures in four Central Nyanza study plots

		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	Total
Thicket	All species	16	17	17	11	22	13	16	14	1	5	5	8	4	5	10	
	Non-granivorous species	15	17	16	10	20	12	13	12	—	5	5	8	4	5	10	
	Palaearctic species	—	7	11	4	4	1	2	4	—	—	—	—	—	3	8	44
Acacia	All species	15	14	18	16	23	49	16	14	40	18	22	26	12	31	16	
	Non-granivorous species	10	12	9	10	17	24	13	13	11	12	15	22	12	31	14	
	Palaearctic species	—	3	4	3	2	3	—	5	—	—	—	—	1	22	5	43
Cultivation	All species	47	31	20	21	33	17	29	44	8	42	18	23	20	28	23	
	Non-granivorous species	7	6	8	9	12	7	10	9	3	17	3	9	7	10	15	
	Palaearctic species	—	1	2	2	2	—	2	2	—	—	—	—	1	1	6	19
Papyrus	All species	27	26	23	82	30	36	103	47	16	22	24	13	28	16	20	
	Non-granivorous species	21	19	15	21	12	15	26	11	12	15	14	8	13	9	17	
	Palaearctic species	—	—	2	6	—	1	—	—	—	—	—	—	—	—	—	9

Acacia seyal savanna is an important habitat for passage migrants but it provides regular winter quarters for only the Whinchat *Saxicola rubetra* (one or two per hectare). October–November figures for this habitat in Table 3 are inflated by a large catch of aerial feeding Swallows *Hirundo rustica* and Sand Martins *Riparia riparia*, so that Palaearctic species account for 52 per cent of non-granivorous birds (44 per cent of biomass). Concentrations of feeding hirundines are not normally found in this plot, but even in their absence the percentage of Palaearctic birds caught can be large when a "fall" of migrants is involved. For example, morning catches were made in this habitat, but outside the study plot, on 9th November 1969 and 22nd March 1971: of 27 non-granivorous passerines caught on the first date, 16 were of Palaearctic origin (11 species), forming 59 per cent of the total (46 per cent of biomass); and of 9 non-granivorous passerines caught on the last date, 7 were of Palaearctic origin (5 species), forming 78 per cent of the total (83 per cent of biomass). These figures contrast with only 4 per cent of the October–November catch in papyrus only 1 km away (Table 3). Yet, considering species rather than individuals, the papyrus plot has the highest percentage of Palaearctic birds (Table 2).

Data from other habitats were collected in a less systematic manner, without any special effort to catch Palaearctic birds. Table 4 includes data from Kakamega Forest, 50 km east of the study area, and from three sites on Mt. Elgon, 150 km north of the study area. Nets at Kakamega were set along forest paths and captures do not include any edge element, but Elgon sites

TABLE 2

Totals of passerine species recorded in four Central Nyanza study plots in fifteen monthly visits.

	All species	Non-granivorous species	Palaearctic species	Palaearctic species as % of non-granivorous species
Thicket (area 1 ha)	48	39	9	23
Acacia (2 ha)	64	43	11	26
Cultivation (1 ha)	71	42	8	19
Papyrus (1 ha)	48	30	9	30

TABLE 3

Palaearctic passerine captures on four Central Nyanza study plots in October–November

	Thicket	Acacia	Cultivation	Papyrus	Total
Hirundo rustica		15			15
Riparia riparia		8			8
Motacilla flava			1		1
Muscicapa striata		1			1
Ficedula albicollis	1				1
Lanius cristatus		3			3
Saxicola rubetra		4			4
Sylvia borin	27	2	8	1	38
S. atricapilla	1				1
Acrocephalus scirpaceus			1	1	2
Phylloscopus trochilus		1			1
Total of Palaearctic birds	29	34	10	2	75
Total of non-granivorous birds	48	66	39	50	
Biomass (g) of Palaearctic birds	535	578	178	30	
Biomass (g) of non-granivorous birds	1062	1291	903	829	
Palaearctic birds as % of total	60	52	26	4	
Palaearctic biomass as % of total	50	44	20	4	

were often at the edge. The number of Palaearctic birds at Kakamega (2 per cent) would certainly increase if edge areas were worked; but it is doubtful whether figures would be as high as on Mt. Elgon at much higher altitudes (10–12 per cent). Forest undergrowth above about 1500 m provides winter quarters for only the Blackcap *Sylvia atricapilla*, which accounts for virtually the whole Palaearctic catch in these areas.

Lake Nakuru in Kenya's Rift Valley, some 150 km south-east of the study area, provides a further comparison. The data in Table 5 refer to December 1968 when the lake level was high. Nets were set for thirteen days at the lake edge, in sedges and grassland with scattered small acacia trees, and were hardly closed except at night. Hirundines formed 81 per cent of the total passerine catch, and two species of Palaearctic hirundines alone formed 49

TABLE 4

West Kenya habitats as winter quarters for Palaearctic passerines, December–January data only

	Thicket	Acacia	Cultivation	Kakamega forest	Mt. Elgon forest		
				(1700m)	2400m	2500m	2800m
Sylvia borin	7		2				
S. atricapilla				3	8	5	20
Acrocephalus palustris			1				
A. schoenobaenus			1				
Phylloscopus trochilus					2		
Saxicola rubetra		4					
Phoenicurus phoenicurus	1						
Motacilla flava		1					
Total of Palaearctic birds	8	5	4	3	10	5	20
Total of non-granivorous birds	30	27	21	146	100	47	161
Biomass (g) of Palaearctic birds	149	78	56	57	156	86	371
Biomass (g) of non-granivorous birds	602	729	651	4022	2099	986	3652
Palaearctic birds as % of total	27	18	19	2	10	11	12
Palaearctic biomass as % of total	25	11	9	1	7	9	10

TABLE 5

Lake edge at Nakuru as a winter habitat for Palaearctic passerines December 1968 data only.

Palaearctic species	No.	Biomass (g)
Hirundo rustica	235	4151
Riparia riparia	49	614
Moticilla flava	58	947
Phylloscopus trochilus	6	50
Lanius cristatus	3	76
Muscicapa striata	1	14
Acrocephalus schoenobaenus	1	11
Total	353	5863
Ethiopian species		
Riparia paludicola	184	1806
Other non-granivorous species	43	959
Total	227	2765
Palaearctic birds as % of total	60	68
Palaearctic hirundines as % of total	49	55
Riparia paludicola as % of total	32	21
Hirundines as % of total	81	76
Palaearctic hirundines as % of hirundines	61	73

per cent of the catch. Palaearctic passerines as a whole formed 60 per cent of the catch (68 per cent of biomass). The vast majority of these Palaearctic birds were either Swallows, Sand Martins or Yellow Wagtails *Motacilla flava*, probably mainly wintering birds. As such, these figures are remarkably high, especially bearing in mind that figures for non-passerines (mainly waders) would likely show a far greater percentage of Palaearctic individuals.

SUMMARY AND CONCLUSIONS

Moreau (1972) has shown that about 20 per cent of the African non-forest avifauna consists of Palaearctic immigrant species, but there is no estimate available of the comparative numbers of individuals. Data obtained from systematic netting in various west Kenya habitats permit valid estimates to be made. Only non-granivorous passerines are considered.

During the passage months of October and November, Palaearctic passerines (mainly *Sylvia borin*) constitute 50 per cent of the avian biomass in *Lantana* thickets; and the percentage (various species) may be still greater in *Acacia seyal* savanna, though on average it is much less if aerial feeding hirundines are excluded. In overgrown cultivation the figure is 20 per cent, and in papyrus swamp only 4 per cent. Considering species only, papyrus has the greatest proportion of Palaearctic birds (30 per cent), which illustrates how misleading figures based on species rather than individuals can be in assessing the impact of the immigrant avifauna.

As a wintering area, *Lantana* thickets are again important, with Palaearctic species accounting for 25 per cent of the avian biomass, against figures of 1–11 per cent in other habitats, including forest undergrowth. Away from the edges, forest undergrowth and papyrus swamp provide haven for virtually no Palaearctic birds. The further inevitable destruction and fragmentation of forest and swamp habitats will increase the feeding opportunities for Palaearctic migrants, and favour the further dissemination of obnoxious plants like *Lantana camara*.

A sample from Lake Nakuru in December 1968 is included, taken when the lake level was high, and assumed to refer to wintering birds. In lake edge sedges and grassland, Palaearctic species accounted for 68 per cent of the avian biomass, almost entirely *Hirundo rustica*, *Riparia riparia* and *Motacilla flava*.

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On the validity and range of *Lamprotornis corruscus mandanus* Van Someren, 1921

by P. A. Clancey

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Van Someren (1921) was the first to demostrate that the glossy starling *Lamprotornis corruscus* Nordmann, 1835: Galgenbosch, near Thornhill, eastern Cape, is polytypic when he proposed *L. c. mandanus* (van Someren),

1921: Manda Island, coastal Kenya, on the basis of small size. Sclater (1924–1930) admitted *mandanus*, giving its southern range limits as the lower Zambesi R. In 1952, I pointed out (Clancey 1952) that north-eastern Zululand specimens appeared to be inseparable from *mandanus* from East Africa, but in my own *Catalogue* (Clancey 1965–1966) I admitted only the nominate subspecies as occurring in the South African Sub-Region. Mackworth-Praed & Grant (1955) recognise all four described subspecies: *L. c. corruscus*, *L. c. mandanus*, *L. c. jombeni* and *L. c. vaughani*, showing *mandanus* as ranging south to the littoral of northern Moçambique. Amadon (1956: 1962) synonymized with nominate *corruscus* both *mandanus* and Van Someren's later second mensural race *L. c. jombeni* (van Someren), 1931: Jombeni Hills, north-east of Mt. Kenya, Kenya, admitting only *corruscus* and the insular *L. c. vaughani* (Bannerman), 1936: Pemba Island, Tanzania.

During a recent working visit to the National Museum of Rhodesia, Bulawayo, the Keeper of Ornithology, Mr. M. P. Stuart Irwin, mentioned to me that Blackbellied Starlings breeding in the Haroni–Lusitu area of south-eastern Rhodesia were certainly not the same as those of the eastern Cape (topotypical of *L. c. corruscus*). I have now investigated this matter with a reasonable panel of material which reveals that *L. c. mandanus* is a valid race with an immense range, extending from the Juba R., in Somalia, south to Zululand (Ngoye Forest) in South Africa (confirming my tentative findings of 1952), and that *L. c. corruscus* is restricted to the south-eastern and eastern Cape and Natal. The size parameter cannot be employed satisfactorily unless one has adequate series of both adult and immature (pre-basic) birds and the sexing of the specimens is beyond reproach. I mention this because much of

TABLE 1

The wing-length variable in adults of three subspecies of *Lamprotornis corruscus* Nordmann

Population	Sex	N	Range	M	S.D.
			Lamprotornis corruscus corruscus		
Eastern Cape	♂	11	113·5–119	115·8	1·85 mm
	♀	6	108–111	109·2	1·36
Pondoland	♂	9	113·5–118	115·3	1·80
	♀	7	107·5–110	108·3	1·18
Natal	♂	8	111–117·5	115·3	2·75
	♀	8	107·5–112	108·9	1·74
			Lamprotornis corruscus mandanus		
Zululand (Ngoye)	♂	5	109–113	111·0	1·58 mm
	♀	2	106, 106·5		
Sul do Save	♂	7	109–113	110·2	1·98
	♀	6	104–107	105·8	1·13
Manica e Sofala	♂	6	107·5–112	110·0	2·04
	♀	1	105		
Eastern Rhodesia	♂	8	109·5–112	110·5	0·82
	♀	—			
Tanzania	♂	4	108–112	110·2	1·71
	♀	—			
Kenya (coast and Tana R.)	♂	12	107·5–113	109·5	1·55
	♀	10	102–106	104·1	1·70
			Lamprotornis corruscus jombeni		
Kenya (highland) (after Van Someren 1932)	♂	5	116–121	119·0	2·74 mm

The extremely conservative nature of the wing-length ranges and close similarity of the means in *L. c. corruscus* and *L. c. mandanus* will be noticed.

Amadon's material was unsexed and he clearly did not differentiate between adults and those in immature plumage when formulating his conclusions. In this starling immature (pre-basic) males are smaller than adults, equalling in size adult females, while immatures of the latter are substantially smaller than their respective adults. In arriving at my conclusions I have taken care to sort out the material into age classes.

Specimens of adults in immaculate plumage from the Juba R. and the coast of Kenya, south as far as the Ngoye Forest, Mtunzini district, Zululand, show no differences of subspecific import. Males of this assemblage of populations have the flattened wings 107·5–113. females 102–107 mm (see Table 1), the males with the ventral surface below the Chessylite Blue (Ridgway 1912, pl. xx) plastron medially washed with metallic violet and heavily burnished with antique gold sheen. South of Zululand, in Natal, the Transkeian Territories and the south-eastern and eastern Cape, size in adults increases markedly, thus: wings of ♂♂ (111) 113·5–119, ♀♀ 108–112 mm. The male with a wing as low as 111 mm. is from the Natal population, and reveals the influence of the presence of the small eastern littoral *mandanus* in adjacent Zululand. Ventrally the large-sized southern males show extensive matt black over the medio-ventral plane, with reduced metallic violet overlay, the gold sheen restricted to the lateral surfaces and flanks. Females show no obvious colour differences not consonant with wear or individual variation. Despite opinion to the contrary, *L. c. mandanus* is a perfectly valid subspecies, but is not restricted to East Africa, and requires to have its established range extended south to Zululand in the Republic of South Africa.

The littoral populations of the Blackbellied Starling ranging from south-western Somalia to the south-eastern Cape may therefore be arranged in two subspecies on the basis of the following summarized characters:

(a) *Lamprotornis corruscus corruscus*

♂♂ wings in adults 113·5–119, ♀♀ 108–112 mm. Male with venter below plastron medially matt black with some violet gloss and washed laterally with antique gold sheen.

Ranges from the south-eastern and eastern Cape to Natal.

(b) *Lamprotornis corruscus mandanus*

♂♂ wings in adults 107·5–113, ♀♀ 102–107 mm. Male with venter below the plastron medially overlaid with metallic violet and heavily burnished with gold sheen. Ranges from south-western Somalia (Juba R.) and Kenya on the Tana R. and coast, to the mainland coast, Zanzibar and Mafia in Tanzania, Moçambique, eastern Rhodesia, eastern Swaziland (Lebombo Mts.) and Zululand.

I have not seen any of the limited available material of *L. c. jombeni*, but judging by the wing-lengths of adult males given by van Someren (1932) it is even larger on average than the nominate subspecies, and is stated by its describer to be "rather brighter" in colour facies than *L. c. mandanus*. Its range is restricted to the eastern highlands of Kenya on Mt. Kenya and the neighbouring Jombeni Hills. *L. c. vaughani* is restricted to the island of Pemba, and differs from *mandanus* in having the crown bluish violet rather than green or greenish blue.

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Notes on birds from the southern Sudan

by F. O. Cave

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I returned to the Sudan in November 1954 and was there until December 1955. During that period it was not possible to do any collecting and very little field work, except at Bussere (7°32′N, 28°00′E) where I had a certain amount of free time at irregular intervals for watching birds and keeping field notes. There was then some chance that a second edition of *Birds of the Sudan* (Cave & Macdonald 1955) would be produced and new information be included in it. As this has not proved possible, items of special interest have been extracted here from my field note-book and the whole book has been lodged in the library of the Sub-department of Ornithology, British Museum (Nat. Hist.) at Tring.

Great care was taken over identifications and any doubt was expressed in the field-note book. I am grateful to Mrs. B. P. Hall for some help at that time in checking identifications in the Bird Room from the descriptions in my notes, and for assistance now in preparing this paper.

Numbers and nomenclature follow Cave & Macdonald 1955, except that *Charadrius forbesi* Forbes's Plover is new to the Sudan and should be inserted as 182(b).

182(b) *Charadrius forbesi* Forbes's Plover

Bussere 29 March–3 September. The first pair of this rare plover to be recorded in the Sudan was seen on a sandbank in the river in March. From July to 3 September up to four birds were seen at various times in three different localities, all ironstone clearings with short grass and anthills, alongside the Ngolima road and the old road to Wau at Km Post 281 and between Km Posts 274 and 275. I assumed they had been breeding there although I had not seen any when I had visited these ironstone patches from time to time between March and July. Possibly if they were breeding they had kept to longer grass outside the clearings. The only possible young bird seen was one on 3 July which had no red round the eye and a yellowish instead of a red bill. I returned to these sites several times later in September without seeing them so presume they had then moved south.

The discovery of this plover in the Sudan is not unexpected since it is known from the Ubangi-Shari and Lake Albert.

547 *Cercomela familiaris.* Red-tailed Cercomela
Bussere 11 July. A pair seen on an ironstone outcrop on the road to Ngolima. A slight but not unexpected extension of range.

753 *Chalcomitra amethystina.* Amethyst Sunbird
Okaru (4°31'N, 32°10'E), 3,500 ft., 26–28 January. A pair were seen at an old weavers' nest on several occasions, the female apparently feeding young, though no food was visible in her bill. Recorded previously in the Sudan only from the Didinga Mts between 5,000 and 7,000 ft.

781 *Ploceus heuglini* Heuglin's Weaver
Bussere. Between 13–17 April in a small colony in ironstone woodland the males were displaying, shivering their tails and sometimes twinkling their wings: they also bit off leaves and let them drop to the ground. At intervals copulation took place on a branch outside the nest. At the end of April the nest site was found to be deserted. On 27 September another small colony was found nearby where birds were constructing nests. One was almost completed between two visits at 09.30 and 16.30 hrs. All nests in both colonies were associated with hornets' nests.

This weaver seems to be commoner than previously supposed (Cave & Macdonald 1955).

783 *Ploceus vitellinus* Vitelline Masked Weaver
Bussere. Nesting in trees overlooking the garden pool and seen feeding young on 17 November. This species and *P. heuglini* (above) are regarded as members of a superspecies by Hall & Moreau (1970). These records show there is clearly some overlap in their breeding ranges, though possibly with ecological segregation, *P. heuglini* occupying drier and taller woodland.

819 *Clytospiza monteiri* Brown Twinspot
Bussere 31 May, 2 June, 19 October. One or two seen in the garden. Not previously recorded in the Sudan from so far north.

827 *Mandingoa nitidula* Green Twinspot
Okaru, 3,500 ft., 26 January. One bird was seen flying from thick cover on one side of the khor to the other. Only previously recorded in the Sudan from 7,000 ft. in the Dongotona Mts, but found at lower altitudes elsewhere.

844 *Nesocharis capistrata* Olive-back
Bussere 2–4 June. A pair seen in trees overlooking a pool in the garden. Thus in similar habitat as that in which the species has been found in Uganda (Ziegler 1971). Another slight northward extension of range in the Sudan.

850 *Hypochera nigeriae* Green Indigo-bird
Between 2–15 September several indigo-birds were seen in the gardens and along the river which appeared to be this form, having brown wings and tail and a greenish sheen. On 13 November one was shot nearby which had these characters. The most likely host species for these birds seemed to be *Lagonosticta senegala* which was common along the river, though two other firefinches, *L. rufopicta* and *L. nigricollis* occurred in the ironstone woodlands.

In Nigeria Payne (1973) found that *nigeriae* -type indigo-birds mimicked (and so presumably were parasitic on) *L. rubricata*, which has not been recorded in the Sudan except in the extreme south.

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Geographic variation in the Rufous-tailed Foliage-gleaner *Philydor ruficaudatus*, with notes on plumages

by Kenneth C. Parkes

Received 3rd April, 1974

Current ornithological literature recognizes two subspecies of *Philydor ruficaudatus*, a medium-sized furnariid widely distributed in the northern half of South America east of the Andes. These are *P. r. flavipectus* Phelps & Gilliard, ascribed to a few localities in southeastern Venezuela and the Serra Tapirapecó, Brazil, just over the Venezuelan frontier; and *P. r. ruficaudatus* (D'Orbigny & Lafresnaye), the remainder of the range of the species including one Venezuelan locality (base of Mount Duida) (Phelps & Phelps 1963: 68–69).

Carnegie Museum of Natural History (CM) recently received two Ecuadorean specimens of this species on exchange with Occidental College. When these were compared to our Brazilian material it was immediately obvious that they were subspecifically different, although from areas now included in the range of the nominate race. The CM series was therefore taken for direct comparisons to the American Museum of Natural History (AMNH), where the type of *flavipectus* is deposited.

Phelps & Gilliard (1941: 4) described their "*Phylidor*"[*sic*] *ruficaudatus flavipectus* as "Similar to *P. ruficaudatus* but less grayish below, with a bright yellowish wash on underparts, especially throat which is brightly washed with Mustard Yellow [of Ridgway 1912] instead of pale Straw Yellow. Under wing-coverts and axillaries more ochraceous, less buffy. Sides of chest and flanks more yellowish olive, less grayish olive". I was able to examine the holotype and two paratypes of this form at AMNH. Specimens ascribed to *ruficaudatus* at AMNH were the same as those listed by Phelps & Gilliard (1941: 5), to which were added CM specimens as follows: eastern Amazonian Brazil (Santarém, Obidos, Villa Braga, Miritituba), 10; southwestern Amazonian Brazil (Río Purús), 3; eastern Ecuador, 2.

The type locality of *ruficaudatus* is Yuracares, Chaparé District, Dept. of Cochabamba. This locality is in the lowlands of west-central Bolivia, in the drainage of the Río Mamoré. I have examined two Bolivian specimens: that from the Cochabamba lowlands listed by Phelps & Gilliard, and the type of *Anabazaenops immaculatus* Allen, from an uncertain locality in northern Bolivia. These specimens are inseparable from one from Mato Grosso, and from the CM series from eastern Amazonian Brazil. All of these birds are thus referable to the nominate race.

In the northeastern corner of the range of the species, the ventral colour becomes brighter, yellower, less greyish as the range of *flavipectus* is approached (Belém region of Brazil—Cayenne—Mt. Duida, Venezuela). The range ascribed to *flavipectus* by its authors seems to require its being almost completely surrounded by nominate *ruficaudatus;* the area at the base of Mount

Duida, said to be the only Venezuelan locality for *ruficaudatus*, is less than 200 km from localities ascribed to *flavipectus*. It does in fact appear that southeastern Venezuela is a centre of differentiation in this species, as manifested in the characters given in the description of *flavipectus*. The influence of this centre, however, extends well beyond the limited range given for that race. When compared with Bolivian *ruficaudatus*, the two Mount Duida specimens are seen to be much closer to *flavipectus*, and I would so identify them. Those from the Guianas and the Belém region of northeastern Brazil are best considered *flavipectus—ruficaudatus* intergrades.

Remaining to be discussed are the birds of the western portion of the species' range, from Colombia south to Peru. Those of Ecuador and Peru clearly belong to a distinctive but unrecognized third subspecies. In *ruficaudatus* the barbs of the breast feathers have narrow dark edges (visible under a hand lens), and the bases of these feathers are dark grey. The webs of the abdominal and (especially) flank feathers are darker and duller than their shafts. The net result is an appearance of broad blurred streaks of pale yellow and dull olivaceous brown on the breast, narrow yellowish streaks on a dull olivaceous yellow background on the abdomen, and similar streaks on a dull olivaceous brown background on the flanks. In the birds of Ecuador and Peru the breast feather barbs are a uniform pale yellow without dark edges, and the bases of the breast feathers are pale grey (thus not "showing through" the yellow overlapping feathers, as do the darker feather bases of the eastern birds). There is little contrast between the shafts and webs of the abdominal and flank feathers. The net result is an appearance of *uniform* pale yellow underparts, with a greater contrast between the pale yellow medial area and the olivaceous flanks; the latter are rather paler and yellower than in *ruficaudatus*. The yellow of the throat of the western birds is about the same as that of *ruficaudatus*, but that of the breast is paler and purer. It follows that there is a more noticeable contrast between the throat and the breast in western birds than in eastern. In addition, the dark bases of the throat feathers of *ruficaudatus* result in a spotted appearance, especially when the yellow terminal portions are worn and do not wholly overlap the feathers below. The feather bases of the throat in the western birds are pale, and the throat appears uniformly yellow.

The feather pigmentation of *flavipectus* is presumably distributed similarly to that of *ruficaudatus*, as the same ventrally streaked appearance characterizes both races (I did not examine *flavipectus* feathers with the hand lens).

According to the synonomy presented by Cory & Hellmayr (1925: 208), the earliest available name based on material from within the range of this unstreaked race is *Philydor subflavescens* Cabanis (1873), type locality Monterico, Dept. Ayacucho, Peru. Although this type locality is assurance that the name applies to the population under discussion, further evidence is afforded by the wording of Cabanis's description, even though he did not compare his new species with *ruficaudatus:* "Der Superciliarstreif und die ganze Unterseite sind matt hellgelb. Das Gelb ist an der Kehle am reinsten, sonst aber mit Olivengrau untermischt, besonders an den Weichen und dem After vorherrschend schmutzig olivengrau".

The three CM specimens from the Río Purús in southwestern Brazil must be considered intergrades between *ruficaudatus* and *subflavescens*. The blurred streaking of the underparts typical of the former race is present but less obvious, and the throat is distinctly richer yellow than the breast, as in the latter race. I have not seen specimens from Bolivia from as far west as the

Río Bení (Gyldenstolpe 1945: 157), but would expect these, too, to show the influence of *subflavescens*.

I have seen eight specimens from Colombia, at the northwestern corner of the species' range. Five of these are native "Bogotá" skins of unknown provenance, presumably from the tropical zone east of the eastern Andes, the only area in Colombia known to be inhabited by this species. These are nearest *subflavescens*, but average somewhat less pure yellow (=more grey) below. Two from the Sierra de Macarena are unstreaked like *subflavescens*, and match the greyest of the "Bogotá" specimens in colour of underparts. A single specimen from Villavicencio is remarkably similar to the Río Purús birds—yellower than true *ruficaudatus* and more streaked below than true *subflavescens*. It is likely that intergradation between *subflavescens* and *flavipectus* takes place in easternmost Colombia, but I have seen no specimens from this region.

Cory & Hellmayr (1925: 208, footnote) stated: "The birds with deep ochraceous superciliaries and sides of the head, brownish back, rufous-edged upper tail-coverts, and deeper buffy underparts constitute the juvenile plumage. Birds in which the ochraceous superciliaries persist after the juvenile molt (first annual plumage?) have been separated as *P. euophrys*." Neither the CM nor AMNH collections contain a specimen of *P. ruficaudatus* in full juvenal plumage. The youngest specimen examined is AMNH 524243, "Dalmas, East Ecuador" (no other data). It was apparently completing the last stages of the first prebasic moult ("juvenile molt" of Cory & Hellmayr); the under tail-coverts are of the fluffy texture typical of the juvenal plumage in Passeriformes. Active body moult was present only on the flanks, where the old feathers, of a rather whitish buff, were being replaced by darker, more olivaceous feathers. This does not accord with Cory & Hellmayr's characterization of the "deeper buffy underparts" of the juvenal plumage. In this specimen, rectrices R3, R4, R5 and L6 are short (growing). The full-length rectrices show no wear at the tip; in fact, several bear remnants of the natal down. The facial plumage is of the first basic plumage (presumably the "first annual" of Cory & Hellmayr), and is indeed of the deep ochraceous type. Lacking a younger specimen, I cannot confirm that the superciliaries and face are of this colour in the juvenal plumage, but in any case Cory & Hellmayr's use of the word "persist" is misleading, as the juvenal feathers in this area are replaced, not retained, at the first prebasic moult.

AMNH 524242, with the same data, is similar but farther advanced in body moult; the plumage is very fresh, and no sheathed feathers were found. *All* of the rectrices, on the other hand, are sheathed, and their relative lengths are the same as in a full-grown tail, indicating simultaneous growth. This does not represent the replacement of an accidently lost tail, as the growing rectrices bear wisps of natal down at the tips. These two specimens illustrate an unusual moult pattern in that the first prebasic body moult has been completed, or nearly so, before the completion of growth of the juvenal tail. Growth of the first generation of rectrices in most birds is simultaneous as in AMNH 524242 rather than irregular as in 524243 (the tail moult of adults of this species is of the expected centrifugal type).

The timing of the first prebasic body moult with respect to the growth of the juvenal rectrices shown by the two specimens cited is not necessarily typical of *Philydor*. AMNH 256108, *P. erythrocercus subfulvus* (Boca Lagarto Cocha, Ecuador, 20 January 1926), is in full juvenal plumage (although with sheathed first basic feathers just through the skin on face and back); its juvenal rectrices are full grown.

It is likely that the true juvenal plumage is very short-lived in *Philydor*, as there appear to be so few specimens that even demonstrate stages of its replacement. AMNH 256108, cited above, is the only specimen of *any* species of *Philydor* in full juvenal plumage found in either the AMNH or CM collections.

With so few known immature birds, it seemed desirable to confirm Cory & Hellmayr's statement that the specimens with rich ochraceous faces do indeed represent an age class rather than a colour morph. This is confirmed by such specimens as AMNH 179429 (Río Suno, Ecuador, 12 February 1923), in which rich ochraceous-buff cheek feathers are being replaced by the paler and greener feathers of the definitive ("adult") plumage. First-year birds do not differ from older ones in colour except on the face, as described. They may also be recognized, however, by rectrix shape. The juvenal rectrices, which are not replaced at the first prebasic moult (indeed, may still be growing during this moult, as shown above), are pointed at the tip; the definitive rectrices are quite rounded except for the central pair, which may be acuminate at the very tip.

The recognizable races of *Philydor ruficaudatus* may be summarized as follows:—

P. r. ruficaudatus (D'Orbigny & Lafresnaye). Underparts dull in colour, with blurred streaks. Eastern Bolivia north to Amazonian Brazil.

P. r. flavipectus Phelps & Gilliard. Brighter, more yellowish underparts, also streaked. Southeastern Venezuela, intergrading with *ruficaudatus* in the Guianas and easternmost Amazonian Brazil.

P. r. subflavescens Cabanis. Paler yellow below (throat contrasting with breast); unstreaked. Peru and Ecuador east of the Andes. Intergrades with *ruficaudatus* in southwestern Amazonian Brazil and probably northwestern Bolivia. Colombian populations are near this form but probably intergrade eastwards with *flavipectus* and possibly also with *ruficaudatus*.

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Status of the genus *Sauropatis* (Alcedinidae)

by D. T. Holyoak

Received 28th March, 1974

Mukherjee & Dasgupta (1973) have advocated resurrecting the genus *Sauropatis* but without making suggestions for the generic allocation of most species of *Halcyon* (*sensu* Peters 1945), whose classification would consequently be affected. Apparently such suggestions were lacking because the authors were not able to examine many of the species concerned.

Having now had an opportunity of examining specimens of all species of *Halcyon* as defined by Peters, other than *H. miyakoensis*, I conclude that there are good reasons for not splitting the genus in the way advocated. Examination of other *Halcyon* spp. shows that only the characters of bill-colour and wing-shape cited by Mukherjee & Dasgupta are unique to the species they advocate we keep in a restricted *Halcyon*. Various combinations of their other characters are present in a number of species which seem closer to *H. sancta* than to *H. senegalensis* on the bulk of characters considered together. *Halcyon* of Peters's list could equally well be split on the basis of many other characters besides bill-colour, bill shape and wing-shape, producing equally arbitrary classifications.

Revision of the limits of such a large and difficult genus as *Halcyon* requires study of as many characters as possible in all of the known forms and it is clearly insufficient to compare only two type species. If such further study did show a genus to contain two or more groups of forms that are phylogenetically and morphologically distinct, caution would still seem desirable in advocating changes in classification, bearing in mind that generic limits are largely matters of convenience.

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On the occurrence of the Great White Egret *Egretta alba* in the Persian Gulf region

by M. D. Gallagher

Received 14th May, 1974

INTRODUCTION

Two medium-sized wholly white egrets occur on the Arabian shores of the Persian Gulf, the Little Egret *Egretta garzetta*, a winter visitor, and the white phase of the Reef Heron *E. gularis*, which is resident and migratory. Since 1966 there have been a number of sight records of larger white egrets both on these shores and also on the shores of Oman and Masirah Island, but they have been discounted because of Meinertzhagen's (1954) statement that no specimen of the Great White Egret *E. alba* had come out of Arabia, and because of the supposed difficulty in seeing the characteristic black soles and toes, as well as the difficulty in identifying this species on size alone unless in direct comparison with the smaller egrets.

This note is therefore to put on record the discovery of an old specimen of the nominate race of the Great White Egret from Arabia, which was overlooked by Meinertzhagen; the identification of a recent specimen from the Persian Gulf, assigned to the Asiatic race *modesta*, and the examination of another bird in the hand: and a summary of the sight records to date.

SIGHT RECORDS

My own observations between 1969 and 1973 and those of other reliable observers, given to me or to Mrs. F. E. Warr in personal communications, strongly suggest that Great White Egrets are regular but uncommon winter visitors to the southern shores of the Persian Gulf and southwards to the shores of Oman and Masirah Island, between September and April and occasionally in some other months. At least along the Arabian coast of the Persian Gulf they have been recorded annually.

Starting from the north, there are records of three having been seen at Kuwait in January and two in March 1968 (V.A.D. Sales). One was seen on Abu Ali Island (Saudi Arabia) by Mrs. L. Johansen in November 1971, but none at Bahrain during the 1968–72 period. However, at Qatar P. G. Jones saw one in November 1970, remarking that it was similar in size to a Grey Heron *Ardea cinerea* standing nearby. Along the north-eastern, Batinah, coast of Oman they have been seen between 14 August and 14 April, and singles as late as 23 May (M. St. C. Baddeley) and 10 June (M. P. Searle). One was found dead on 17 October 1970 (D. Shepherd). On Masirah Island one was reported on 13 November 1970, seen in company with Grey Heron and Reef Heron (M. J. Strickland), and another on 1 February 1973 (R. J. Parker).

All these reports were of pure white birds with blackish feet, often seen at close range when the birds flew, and with clear yellow or orange-yellow bills (as opposed to the darker or "dirty" yellow bill of a Reef Heron); in one, the tibia was noted as yellowish. From my own observations I would also characterize the Great White Egret as noticeably bulkier, slower but also more graceful than the Reef Heron. Four, feeding near Sharjah in December 1969, walked slowly in the shallow water of the creek, often raising the feet clear of the surface so that the black soles and toes showed, and occasionally stabbing forward with the bill. One flapped and hopped after prey, but in a manner quite unlike that of the Reef Heron: the movements were always slower and more deliberate. Another, near Muscat in December 1970, stood with a Grey Heron, its head and neck stretched obliquely forward, when the top of its head seemed about level with that of the heron; it quite obviously dwarfed three Reef Herons nearby. Two more I saw in a pool within 50 metres of the road near Ras al Khaimah, near Sharjah again, in September 1972, were clearly large birds with bright orange bills.

In the light of these records, it is of interest that D. A. Scott (pers. comm.) reports *E. alba* as quite common in winter in some of the wetlands and along the south coast of Iran; 250 were counted by aerial survey on 8 January 1973 between Khamir (55° 30′ E) and Bandar Abbas (56° 20′ E), and 113 on 9/10 January 1973 between Bandar Abbas and the Pakistan border. Those on the coast were in a habitat identical in appearance to the creeks, mud flats and mangrove areas along the south coast of the Persian Gulf; Scott remarks that it is strange that the species has not been noticed more frequently in these Arabian localities.

SPECIMENS

Since the differences between the nominate and eastern races of Great White Heron are largely ones of size, it is impossible to be certain which race has been seen most often in the area under consideration, but there is now evidence from actual specimens that both races occur.

Egretta alba alba (Linnaeus)

During a search in the British Museum for Arabian material Mrs. Warr (pers. comm.) found one male *E. a. alba* from Muscat collected by Jayakar on 21 February 1890, BM Reg. No. 1898–5–16–13 (a duplication of BM 1891–2–1–40). It is listed by Sharpe & Ogilvie-Grant (1898: 270) and is thus the first recorded skin from Arabia. Bates (1940) had noted the existence of this specimen, which was presumably missed by Meinertzhagen.

Mr. G. S. Cowles and I measured nine other skins of *alba* in the British Museum collection, none in full breeding plumage. The Muscat bird, which is not in breeding plumage, is distinctly small in comparison, but all measurements are greater than *modesta*, except the bill, and all are within the known range for *alba* (Witherby *et al.* 1958: 139; Ali & Ripley 1968: 69). The

measurements of all specimens measured, including the old Muscat specimen and the two new specimens of the eastern race, are set out in the Table.

E. a. alba breeds nearest Arabia in Turkey and possibly in parts of Iran. It occurs in Iraq as a winter visitor and on passage (Ticehurst 1922; Allouse 1953; and Hüe & Etchécopar, 1970); in the Iranian region (Vaurie 1965; D. A. Scott pers. comm.), including Persian Baluchistan, where one ♂ was collected in April 1800, with the measurements: wing 8 in (457 mm), bill 5 (127), tarsus 8 (203) (Blanford 1876: 295); and as a rare winter straggler to West Pakistan and Uttar Pradesh (Ali & Ripley 1968: 69).

It is of interest that two instances are recorded of *E. alba* (presumably the nominate race) reaching south of the Sahara (Moreau 1972); the Muscat specimen is thus not the only example from the Tropics, and it may represent a small but regular autumn movement along the eastern Arabian coast.

Egretta alba modesta (J. E. Gray)

On 7 February 1971, Mrs. Warr found a dead white egret near Umm al Qawain, 21 miles north east of Sharjah, on the Arabian coast of the Persian Gulf, at approximately 25° 30′ N, 55° 35′ E. This she preserved, sexed as female, and sent to the British Museum (Natural History), where it is now deposited (BM Reg. No. 1973.5.1.) and where G. S. Cowles identified it as *Egretta alba modesta* in non-breeding plumage.

Previously, a freshly shot bird was examined by R. G. Griffiths at Sharjah on 17 September 1968; he told me that it was at least three feet in length, with wing 330 mm, bill approximately 100 mm, and tarsus 140 mm, measurements which would also indicate *E. a. modesta*.

E. a. modesta is recorded from India and Ceylon, through eastern Asia east to Australia and New Zealand, wintering to the south and east of its range (Vaurie 1965; Ali & Ripley 1968). Mrs. Warr's specimen is the first Great

TABLE

Comparative measurements of a sample of non-breeding specimens of *Egretta alba alba* and all specimens in breeding plumage of *Egretta alba modesta* and *Egretta intermedia intermedia* in the British Museum (Natural History) collection, and of the three particular specimens from Arabia discussed in the paper. All measurements in millimetres (bills measured from end of feathering to tip).

Sample and sex		Wing	Tail	Bill	Tarsus
E. a. alba					
6 ♂♂		438–455	157–184	124–137	182–206
	Av.	(446)	(170)	(129)	(198)
3 ♀♀		414–425	147–152	122	178–192
	Av.	(420)	(158)	(122, two only)	(185)
Muscat spec.					
♂ (1890)		412	155	111	181
E. a. modesta					
4 ♂♂		362–377	136–148	109–114	156–167
12 ♀♀		334–377	122–145	95–116	138–170
4 unsexed		322–355	126–137	102–107	138–153
range		322–377	122–148	95–116	138–170
	Av.	(354)	(133)	(105)	(151)
Umm al Qawain					
spec. ♀ (1971)		338	132	109	145
Sharjah spec.					
unsexed (1968)		c. 330	—	c. 100	c. 140
E. i. intermedia					
7 ♂♂		294–317	95–124	73–89	109–124
2 ♀♀		291–295	111–116	72–74	103–113
11 unsexed		287–315	106–126	68–77	103–118
range		287–317	95–126	68–89	103–124
	Av.	(301)	(113)	(75·5)	(111)

White Egret obtained in the Persian Gulf and the first known record of this race west of India. The most westerly specimens previously in the British Museum collection are one from Karachi, dated October; two from Ajmer (26° 27′ N, 74° 42′ E), dated December and January; five from Delhi dated June, and one October; and one from Mhow near Indore, dated December. There are several more from the far east, and also from the Maldive Islands, including Gan, in the Indian Ocean.

Ali & Ripley (1968: 70) state that in females there is an overlap or near overlap in measurements between *modesta* and *E. i. intermedia* so that " . . . identifying individual examples in non-breeding plumage is not always satisfactory, and in some cases even impossible". Cowles and I therefore measured all specimens of *modesta* and *E. i. intermedia* in breeding plumage in the collection at the British Museum (Natural History), and on comparison (see Table) found that (with the exception of two labelled *intermedia* but the measurements and build of which indicate that they are in fact *modesta*) the specimens are easily separable by their measurements and by the appearance of the bill and tarsus, which in *intermedia* are distinctly shorter and more slender than in *modesta*. Both the Umm al Qawain and the Sharjah birds fall conclusively within the range of *modesta* and outside the ranges of *E. i. intermedia* and *E. a. alba*.

Ali & Ripley (*loc. cit.*) reach the general conclusion that *modesta* is usually distinguishable from *intermedia* by having a wing length of over 350 mm and tarsus of over 160 mm. However, they themselves list specimens of *modesta* in which these measurements are as small as 337 mm and 136 mm, respectively, and the British Museum sample measured (see Table) supports the view that 320 mm and 135 mm would be realistic minima for the wing and tarsus length of the larger species.

Egretta intermedia intermedia (Wagler)

In view of the unexpected occurrence of *E. a. modesta* so far west and the admittedly small difference in size between smaller specimens and the largest recorded specimens of *E. i. intermedia*, it is perhaps just possible that the latter also occasionally reaches Oman or the Persian Gulf. It occurs throughout India, Ceylon and other parts of southern and eastern Asia, where it is resident in some areas and nomadic or migratory in others (Ali & Ripley 1968). It has not yet been recorded from the Mekran coast, but the possibility of its occurrence certainly needs to be borne in mind in the light of the frequent records of the larger species in recent years.

ACKNOWLEDGEMENTS

I am indebted to Mrs. F. E. Warr for information about the specimens and her researches in the British Museum (Natural History), and to Mr. G. S. Cowles for assistance and comment during the examination of museum material and during the preparation of this note. Dr. W. R. P. Bourne made helpful criticisms of an earlier draft, Mr. D. Goodwin advised a useful line of enquiry, Dr. D. A. Scott kindly provided his Iranian records, and Mr. T. D. Rogers, Mr. R. H. Daly and Major W. A. C. Griffiths helped in other ways. I am also grateful to the many observers mentioned who supplied details of their records, and to Miss J. C. Gallagher who typed the draft.

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The races of the European Snake Eagle *Circaetus gallicus*

by L. H. Brown

Received 21st June, 1974

Circaetus gallicus has been regarded by some systematists as a species comprising nominate *C. g. gallicus* and two African races, *C. g. beaudouini*, Beaudouin's Snake Eagle and *C. g. pectoralis*, the Black-breasted Snake Eagle; others have regarded the three forms as separate species, *C. gallicus*, *C. beaudouini* and *C. pectoralis*. Mackworth Praed & Grant (1962; *Birds of the Southern third of Africa;* Vol. 1: 165) state "We see no justification for considering the last named a race of the Palearctic Short-toed Eagle *Circaetus gallicus* (Gmelin)". The same view is taken by White (1965. *A revised check-list of African non-passerine birds*. Lusaka: Government Printer), Benson *et al.* (1971; *The birds of Zambia:* Collins; London) and McLachlan & Liversidge (1972; *Birds of South Africa*; Cape Town). These authors therefore disagree with J. L. Peters *et al.* (1931; *Check-list of Birds of the World;* Vol. 1: 270) and Meinertzhagen (1951; *Ibis* 93: 452). Brown & Amadon (1969; *Hawks, Eagles and Falcons of the World*; London and New York) accepted the view of Peters and Meinertzhagen that all three forms were races of one species, basing their opinion, additionally, on one known case of interbreeding between the two African races and on careful examination of available skins in the British Museum and the American Museum of Natural History.

Adults of the *gallicus*, *beaudouini* and *pectoralis* forms are rather distinct, though all have field characters in common. In *gallicus* the throat and upper breast are brown, the feathers basally white, so that it appears streaky. The lower breast and belly are white rather broadly barred brown, but in some specimens the barring is almost absent. In *beaudouini* the upper breast is solid darker grey-brown, contrasting clearly with the rest of the underside which is white crossed with numerous narrow brown barrs; again, some specimens are more sparsely barred than others. In *pectoralis* the upper breast is dark grey, darker than in *beaudouini*, and the rest of the underside pure white. All have white underwings in flight, crossed on the quills by 3–4 narrow blackish bars.

Obvious intermediates between the three forms are apparently not available in collections, though some specimens in the British Museum suggest that intermediates between *beaudouini* and *pectoralis* might occur. This is probable since the two forms interbreed in Western Kenya and individuals with sparse narrow bars on the white underside have been seen in the same area.

The immature plumages are less well known, that of *gallicus* being like the adult but paler; that of *beaudouini* apparently much paler at first, almost white on head and neck, becoming bright brown above and below later; and that of *pectoralis* dark brown above, rufous or cinnamon below, the feathers of the underside having white bases. The downy young of all three forms are pure

white. Presumably, the distinctions in adult and immature plumage are the reason for regarding the three forms as distinct species rather than races of one species *C. gallicus*.

In the field the habits of all three forms are similar. They are birds of open savannas or grass plains, sometimes deserts or, in Europe, heathlands, hunting as much from hovering and soaring flight as from perches; all three regularly hover and are the largest raptors to do so. The voices of all other *Circaetus* species resemble that of the Bateleur *Terathopius ecaudatus* in being loud, raucous and crowing in tone; (e.g. "kok-kok-kok-kok-kaaauw" in *C. cinereus* and "schaaaa-aw" in *Terathopius*). In contrast, the voices of *gallicus*, *beaudouini*, and *pectoralis* are all rather mellow liquid whistles, not very loud, e.g. "hu-opp", "piee-ou", "klueee-oo" and, in display at the nest, a melodious "woodlayoo-weeeu-weeeu-weeeu" accompanied by raising the wings. All three forms are normally rather silent, but all have been heard by me to utter similar calls, usually in soaring display or at the nest.

Beaudouini has been recorded from Uganda by Voous (1966; *Ibis* 108: 627) and the normally migrant *gallicus* from N. Kenya by Owre & Paulson (1968; *Bull. B.O.C.* 88: 151). Between 1953 and 1956 I observed the *beaudouini* form quite commonly in Nyanza Province, W. Kenya, and I have since seen one as far east as the Mwea Plains, E. of Mt. Kenya. Other observers have recorded *beaudouini* in recent years in W. Kenya (Britton, Mann, *in litt.*); and it was also recorded in western Ethiopia in 1965 (Urban & Brown 1969; *A checklist of Ethiopian birds*; Addis Ababa). The ranges of all three can therefore be contiguous or overlapping; and at least the resident African forms can be expected to form pairs and interbreed near the boundaries of their ranges. This they do.

One definite case of interbreeding between the *beaudouini* and *pectoralis* forms, apparently overlooked or ignored by Mackworth-Praed & Grant, Benson *et al.* and others, has already been recorded (Brown 1955; *Eagles*; Michael Joseph, London). On 25.10.53 a pair, of which the male was a typical *pectoralis* and the female a typical barred *beaudouini* were seen at a nest on top of a Euphorbia on Raboor Island, Kavirondo Gulf, Lake Victoria. They were obviously paired, and by 20.12.53 had laid. In 11 hours watching on three days thereafter, only the barred *beaudouini* female was observed incubating, and she was twice fed by the *pectoralis* male with snakes, rising to expose the single white egg each time. This nest still contained an egg on 3.1.54 but had failed by 18.2.54. Two other, different, *beaudouini* type birds were seen on the same island in the same period. On 12.12.54 two adults, both *beaudouini* types, were seen at the same nest, performing a nuptial display with much calling and wing spreading; they did not, however, lay an egg. These records clearly show that *beaudouini* type snake eagles are not uncommon in Western Kenya, and that they may mate and interbreed with *pectoralis* type birds.

Since 1955, further evidence that all three forms may form mixed pairs has come to light, as follows:—

(i) a mixed pair, of which the female was a typical narrow-barred *beaudouini* type, and the male a sparsely barred *gallicus* type were seen near Bahr Dar, Ethiopia on 12.3.65, by myself and my wife; they were perched side by side on top of a tree but unfortunately flew before a camera could be brought to bear. This record is the basis for extending the range of *beaudouini* to W. Ethiopia in Urban & Brown (*op. cit.*).

(ii) another mixed *beaudouini*/*gallicus* pair were seen by me and several other observers in the same locality on 8.2.74. The female was again a *beaudouini* type and was photographed by J. Hunter Sutherland. The male was a nearly

unbarred *gallicus* type which displayed overhead, calling and dipping in flight above the female. They were clearly paired; and it is of interest that they were seen only a few hundred yards from the site of the 1965 record.

(iii) At Lake Abiata, Ethiopia, on 5.2.74 a mixed pair composed of a typical dark-breasted male *pectoralis* and a perfectly typical broadly-barred *gallicus* type female were seen soaring together for about ten minutes. Again, they appeared paired, though it was not certain that they were breeding.

These records suggest that the *gallicus* form may not only migrate to but may also breed in tropical Africa; certainly it forms mixed pairs with both other forms. Conclusive evidence of interbreeding must depend on discovery of nests with mixed pairs in attendance, as in the one definite case already recorded in 1955. Mixed pairs have now been seen, however, of all possible combinations, *gallicus/beaudouini* (2), *gallicus/pectoralis*, and *pectoralis/beaudouini* (breeding). I suggest therefore that there are no longer good grounds for regarding the three forms as separate species, particularly in view of the similarities of voice and other field habits; and that the view of Peters *et al.* that *pectoralis* and *beaudouini* are races of the normally Palearctic *gallicus* is correct.

Bulletin of Zoological Nomenclature: Opinions

In continuation of *Bull. Brit. Orn. Cl.* 92, 1972: 172, and by permission of the International Trust for Zoological Nomenclature, the following Ruling is quoted as an extract from an Opinion published in *Bull. Zool. Nomencl.* affecting birds:

OPINION 999

(*Bull. Zool. Nomencl.* 30 (2), 1973: 80)

Plautus Brunnich, 1772 (Aves): suppressed under the plenary powers

(1) Under the plenary powers the generic name *Plautus* Brunnich, 1772, is hereby suppressed for the purposes of the Law of Priority but not for those of the Law of Homonymy.

(2) The following generic names are placed on the Official List of Generic Names in Zoology with the Name Numbers specified:

(a) *Alle* Link, 1807 (gender: feminine), type-species, by monotypy, *Alca alle* Linnaeus, 1758 (Name No. 1979);

(b) *Pinguinus* Bonnaterre, 1791 (gender: masculine), type-species, by designation by Ogilvie-Grant, 1898, *Alca impennis* Linnaeus, 1758 (Name No. 1980).

(3) The following specific names are hereby placed on the Official List of Specific Names in Zoology with the Name Numbers specified:

(a) *alle* Linnaeus, 1758, as published in the binomen *Alca alle* (type-species of *Alle* Link, 1807) (Name No. 2501);

(*b*) *impennis* Linnaeus, 1758, as published in the binomen *Alca impennis* (type-species of *Pinguinus* Bonnaterre, 1791) (Name No. 2502).

(4) The following generic names are hereby placed on the Official Index of Rejected and Invalid Generic Names in Zoology with the Name Numbers specified:

(a) *Plautus* Klein, 1760 (published in a non-binominal work) (Name No. 2008);

(b) *Plautus* Gunnerus, 1761 (published in a non-binominal work) (Name No. 2009);

(c) *Plotus* Gunnerus, 1761 (published in a non-binominal work) (Name No. 2010);

(d) *Plautus* Brunnich, 1772 (as suppressed under the plenary powers in (1) above) (Name No. 2011).

CONTRIBUTORS

Contributions are not restricted to members of the Club. They should be addressed personally to the Editor, Sir Hugh Elliott, 173 Woodstock Road, Oxford. Contributions are accepted on condition that sole publication is offered in the first instance to this *Bulletin*. They should be type-written, double-spaced, with wide margins, on one side of the paper, and submitted in duplicate.

References to literature must be in the form followed in this or any recent issue of the *Bulletin*. The same applies to nomenclature, scientific names of species and genera, and illustrations including photographs. But photographic illustrations can only be considered if the contributor is willing to pay for the cost of their reproduction.

Contributors introducing a new name or describing a new form should append *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In such a description, the introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further headings as required.

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Membership of the Club is restricted to Members of the British Ornithologists' Union. Members of the Union wishing to join the Club should inform the the Hon. Treasurer, M. St. J. Sugg, 5 The Limes, Hitchin, Herts. SG5 2AY, and send him a remittance for the current year's subscription (£2.50). Members of the Club are sent the *Bulletin* gratis.

Changes of address and other correspondence regarding membership should be sent to the Hon. Treasurer.

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British Ornithologists' Club

Edited by

HUGH F. I. ELLIOTT

Volume 94 No. 4 December 1974

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 94 No. 4 Published: 20 December, 1974

The six hundred and nineteenth meeting of the Club was held at the Cafe Royal, 68 Regent Street, London, W.1, on Tuesday, 17th September, 1974 at 7 p.m.

Chairman: Mr. J. H. Elgood, M.A.; present 26 members and 16 guests.

The speaker was Mr. Jeffery Boswall who, after an amusing introduction, showed the colour sound film "The private life of the Jackass (Magellanic) Penguin" (*Spheniscus magellanicus*), which he had directed and produced for the BBC Natural History Unit. He afterwards added some comments and answered questions on its biology and behaviour.

The six hundred and ninety-first meeting of the Club was held at the Cafe Royal, 68 Regent Street, London, W.1, on Tuesday, 19th November, 1974.

Chairman: Mr. J. H. Elgood; present 22 members and 10 guests.

Mr. P. J. Conder, who had most kindly agreed at very short notice to replace the advertised speaker (regretfully prevented from attending), addressed the Club on "Do birdwatchers understand conservation?", which led to a short but interesting discussion.

Annual General Meeting

The eighty-second Annual General Meeting of the British Ornithologsts' Club was resumed at 6 p.m. on Tuesday, 17th September, 1974 at the Cafe Royal, 68 Regent Street, London, W.1, having been adjourned on 14th May 1974, until that time, for consideration of the Accounts for 1973. Eleven members were present.

Apologies for absence were received from Mr. P. Tate.

In the absence of Mr. P. Tate, the Honorary Treasurer presented the Accounts for 1973 (see *Bull. Brit. Orn. Cl.* 94: 41–4 and below). He pointed out that in 1973 there was a deficit on Income and Expenditure Account of £119 against a surplus in 1972 of £132. However sales of back-numbers of the *Bulletin* in 1972 were exceptionally large at £410; in 1973 they were £185 and in 1974 were expected to be between £100 and £200. Income tax in respect of Deeds of Covenant had not been recovered in 1973 and no provision for the amount recoverable had been made. Judging from the accounts for the two previous years, about £70 would probably be recoverable.

Mr. J. H. R. Boswall proposed and Dr. J. F. Monk seconded that the Accounts for 1973 be adopted and this was carried unanimously.

The meeting closed at 6.15 p.m.

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st DECEMBER, 1973

Expenditure

1972 £		£·p	£·p
	Bulletin:		
	Cost of Publication, Distribution, Index, etc.	1,212·34	
	Less: Sales	339·30	
848			873·04
73	Notices, etc. for Meetings		68·03
21	Audit Fee		22·00
53	Lecture Expenses		42·89
73	Miscellaneous Expenditure and Postage		77·91
10	Projector depreciation		10·00
£1,078			£1,093·87
429	Balance, excess of Expenditure over Income brought down		490·09
132	Transfer to General Fund		—
£561			£490·09

Note: No allowance has been made for subscriptions received in 1973 for future years.

Income

1972 £		£·p	£·p
	Subscriptions:		
498	Members and Associates		440·96
73	Income Tax recovered under Deeds of Covenant 1971/72		—
	Investment and Deposit Income:		
	General Fund	54·34	
78	Trust Fund	48·98	103·32
—	Donation		59·50
429	Balance, excess of Expenditure over Income carried down		490·09
£1,078			£1,093·87
—	Transfer to General Fund		119·33
410	Sales of *Bulletin* for previous years		185·76
151	Rent *less* Expenses—property at Clovelly		185·00
£561			£490·09

BALANCE SHEET, 31st DECEMBER, 1973

1972 £		£·p	£·p
	GENERAL FUND		
	As at 31st December, 1972	962·17	
962	*Less:* Transfer from Income and Expenditure Account	119·33	
			842·84
	BULLETIN FUND:		
110	Donations from Members		110·15
56	CREDITOR		55·00
			£1,007·99
	TRUST FUND:		
	The Capital of this Fund may not be used—the Income from it is General Revenue)		
1,000	F. J. F. Barrington Legacy		1,000·00
£2,128			£2,007·99

1972 £		£·p	£·p
	GENERAL FUND, INVESTMENT		
100	£100 $8\frac{1}{2}\%$ Treasury Loan 1980/82 at cost	100·00	
20	*Less:* Reserve	20·00	
80	£96 Market Value £80		80·00
	PROJECTOR AND SCREEN		
	Addition at Cost	100·00	
	Less: Depreciation	30·00	
80			70·00
1	STOCK OF *Bulletin*—Nominal Value ..		1·00
	No value has been included for the stock of the Scientific Index		
87	*Debtors*		198·50
310	CASH AT BANK—Current Account ..	40·51	
570	—Deposit Account ..	617·98	
			658·49
			£1,007·99
	TRUST FUND, INVESTMENT		
1,000	£1,399·55 $3\frac{1}{2}\%$ War Stock .. .. (£504 Market Value £406)		1,000·00
£2,128			£2,007·99

PETER HOGG, *Vice-Chairman*

M. ST. J. SUGG, *Hon. Treasurer*

We have prepared the above Balance Sheet and annexed Income and Expenditure Account from the books and records of the Club and certify them to be in accordance therewith.

KNIGHTWAY HOUSE,
20 SOHO SQUARE, London, W1V 6QJ.
3rd July, 1974

NORTON KEEN & CO.,
Chartered Accountants.

Special General Meeting

A Special General Meeting of the Club was held at the Cafe Royal, 68 Regent Street, London, W.1 on Tuesday, 19th November, 1974 at 6 p.m. with Mr. J. H. Elgood in the chair. Ten members were present.

The Chairman explained that it had been necessary to call the meeting to consider raising the annual subscription because of the steep rise in costs being experienced by the Club.

The Honorary Treasurer stated that printing charges, which were the Club's major item of expenditure, had risen by over 48% since the annual subscription had been increased to £2 10*s*. with effect from 1st January, 1971. He considered that without a further rise in the subscription of £1 or 40%, a substantial deficit in 1975 would be inevitable. The charge for subscription to the *Bulletin* by non-members had already been raised by the Committee from £3·50 to £4·50 a year, with effect from 1st January, 1975.

In the course of discussion Dr. J. F. Monk queried whether the amount suggested, £1, would be sufficient to avoid the need for a further subscription increase within a year or two. However, it was generally agreed that, in view of the uncertainty of the rate of inflation, it would be better not to raise the subscription more than immediately necessary, despite the work involved in making changes.

The Chairman moved the following resolution, which had been proposed by the Committee as a Special Resolution and of which due notice had been given—

That with effect from 1st January, 1975 the annual subscription for members shall be £3·50 and that Rule (4) shall be amended accordingly.
This was carried unanimously.

The meeting closed at 6.30 p.m.

The occurrence of the Giant Snipe *Gallinago undulata* in Surinam

by F. Haverschmidt

Received 31st October 1974

The Giant Snipe of South America is the largest of all the snipes and, except for its size, is remarkably like the Common Snipe *Gallinago gallinago* in colouration and markings, but it differs from other snipe in having barred primaries and secondaries. It shows certain similarities to the woodcock, such as large the large bill which is very thick at the base (Tuck 1972).

Two races are recognised, the nominate *undulata* in Colombia west and east of the Andes, Venezuela, the Guyanas and the upper Rio Branco region of Brazil, and the larger *gigantea* in southern Brazil, Paraguay, probably Uruguay and doubtfully Argentina (Hellmayr and Conover 1948, Meyer de Schauensee 1966). The Giant Snipe has long been known from Surinam but during my residence from 1946–1968 I could assemble only five sight records in June, October and January–March (Haverschmidt 1968). On two more recent visits, however, October 1972 to March 1973 and November 1973 to April 1974, I found that it regularly occurs, though only in small numbers, and I collected a series of seven specimens.

Tuck (*loc. cit.*) states that in Venezuela the Giant Snipe seems to prefer swamps at all seasons. In a swamp in the llanos at Caño Maniapure, where between 15 and 21 March, 1970, six specimens were collected, the vegetation consisted mostly of aquatic grasses and shrubbery of about 1·5 metres in height, in which small openings in the high cover provided feeding places. Chubb (1916) relates that in Guyana the species occurred in swampy pastures and swampy parts of savannas, and Young (1926) found it from February to June in the coastal area of Guyana in young cane or grasses.

In Surinam I found the snipe in quite a different habitat on the savannas near Zanderij airport about 45 km due south of Paramaribo. These savannas have a sandy soil, completely covered with short grass and also dotted everywhere with small dense bushes and low shrubs. I observed the Giant

Fig. 1 Dry savanna habitat of *Gallinago undulata* at Zanderij, Surinam. December 1973.

Snipe exclusively on quite dry ground covered with savanna herbage to a height of about 50 cm (Fig. 1). Nevertheless, here are some low-lying areas in the savannas which become waterlogged during the rainy season with patches of open ankle-deep water. In these wet areas the Paraguayan Snipe (*Gallinago gallinago paraguiae*) was quite common, but I never found *undulata*.

Bird life is poor in the dry grassland frequented by the Giant Snipe. The only breeding birds were: Common Ground Dove *Columbigallina passerina*, the Eastern Meadowlark *Sturnella magna* and the Grassland Sparrow *Myospiza humeralis*. The scattered bushes also housed the Tropical Mockingbird *Mimus gilvus* and the shrubs the Black-faced Tanager *Schistochlamys melanopis*.

The Giant Snipe only flew when almost trodden upon, in sharp contrast to Common Snipe which takes wing at a much greater distance. When flushed *undulata* utters, once or twice, a harsh, two-syllabled "kek-kek", flies at a low speed a short distance, always avoiding the bushes and shrubbery, and alights again in the grass. I never saw more than two birds in a day, I

never saw them active or feeding, and I had the impression that they were simply roosting. It seems likely that they become active only at nightfall, making their way to wetter places to feed, as has been observed elsewhere. Natterer (according to von Pelzeln 1871) heard on several occasions during bright nights in the Rio Branco region of Brazil their loud call high in the air, described as a three-syllabled "or-a-paz" and he remarks that the local population said that the call sounded like "buen esta". Whether the Giant Snipe "bleats" or "drums" like various other snipe is not yet known, but Tuck (*loc. cit.*) remarks that the outer tail-feathers (the tail has 14 feathers) are relatively narrow (5–7 mm.), progressively widening towards the centre, and that it is likely that they are used for some sort of bleating display like that of *Gallinago hardwicki* as recorded by Reynolds (1935) in the Cape Horn region.

Very little is known about the breeding habits of the Giant Snipe. The eggs of the nominate race are apparently unknown and Schönwetter (1967) only describes those of the race *gigantea*. I am convinced that *undulata* does breed in Surinam, nothwithstanding the fact that I never succeeded in finding a nest. Although specimens collected by me in January 1973 were in non-breeding condition, ♂♂ shot on 25 February and again on 15 December 1973 had enlarged testes, and a ♀ collected on 9 January 1974 had eggs of the size of a pea in its oviduct, so that laying was obviously approaching. I always marked the place where I flushed one of these snipe, but never observed one in the same spot on later visits.

My records are: 2 January 1973, 1 (coll.); 4 January, 1; 5 January, 1; 7 January, 2; 14 January, 2 (1 coll.); 28 January, 1 (coll.); 4 February, 2 (1 coll.); 11 February, 1; 25 February, 2 (1 coll.); 3 December, 1; 6 December, 2; 11 December, 1; 15 December, 2 (1 coll.); 9 January 1974, 2 (1 coll.) and 30 January, 1. All the specimens are in the Leiden Museum.

Measurements: the wing length of four ♂♂ is: 157, 161, 162 and 162 mm, of one ♀ 164 mm. All are within the size range of *undulata* as quoted by Mrs. Meinertzhagen (1926), namely—two ♂♂ 158, 165 mm, two ♀♀ both 164 mm and three unsexed 155–165 mm (as compared with *gigantea:* one ♂ 176 mm, and six unsexed 169–179 mm.

Weight: I know of only one previous record of the weight of *undulata*, a ♀ from Venezuela which weighed 282·2 g (Tuck 1972). The weights of my specimens were: five males ♂♂ 270, 276, 288, 315 and 320, and two ♀♀ 341 and 362. None of them showed any sign of fat.

Colour of the soft parts: iris brown, bill brown, feet lead colour, nails black.

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Weights and perching habits of birds at Port Moresby, Papua, New Guinea

by J. H. Elgood

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During a visit to the University of Papua New Guinea at Port Moresby from late February to early July 1974, it was possible to collect data that may be of some interest in view of the paucity of information, particularly in English journals, on birds of that area. The combination of regular teaching duties and reduced mobility, due more to increasing years than to lack of transport facilities, made continuous or distant observations impossible.

The Campus at U.P.N.G. is in a wide valley between low hills, which, because their steepness has limited urban development, have largely retained unbroken savanna vegetation, whereas the valley floor has become greatly modified through human activity in recent years. Port Moresby lies in a rain shadow so that savanna is at least partly natural, though dry season firing of the grass is clearly an important factor; it comprises a light cover of trees, largely *Eucalyptus* spp., interspersed with patches of sago-palms *Cycas* spp., while the grass is predominantly Kangaroo Grass, *Themeda* sp. In most years the rains cease about the end of April and drying winds facilitate grass burning, but in 1974 the rains persisted, on a reduced scale, until after my departure so that the area remained consistently verdant. The development of the University during the last eight years has involved the construction of massive concrete buildings, the formation of an extensive staff housing area with gardens, an inter-connecting road system and large areas of closely mown grass, mainly as playing fields. A few streams traverse the valley floor, bordered by gallery forest, but for the most part undeveloped areas support savanna in which *Eucalyptus confertiflora* is dominant.

Mainly by mist-netting, the live weights listed below in Table I were determined. A notable feature of this mist-netting in comparison with that undertaken on University campuses in Nigeria (Ibadan, Lagos and Zaria) was the extremely low rate of capture. One 40 ft. six-shelf net captured only two birds, both *Cracticus mentalis,* in two months of continuous flying, an equally low rate of bat capture making it quite unnecessary to furl the net at night. The weight records include those of two local hand captures and of a number of specimens collected for the University Museum. Table I gives the live (or just shot) weights of fifty-two birds belonging to twenty-five species. In most cases the sexes were not determined, though some were clearly juveniles, as indicated. Nomenclature and order follow that of Rand & Gilliard 1967.

The most interesting feature of this Table is the diversity of weights, indicative of different feeding habits, in members of the same family:

Alcedinidae (Daceloninae)	105·0	43·0	40·0	32·9
Campephagidae	91·0	73·0	24·2	
Muscicapinae	21·7	21·0	13·0	11·2
Meliphagidae	144·6	20·2	15·6	

In the kingfishers, no specimen of the Blue-winged Kookaburra, *Dacelo leachii* was captured but it must be at least twice as heavy as *D. gaudichaud* (105 g). The nearly tenfold difference between the honeyeater *Meliphaga*

flavescens (15·6 g) and the friar bird *Philemon novaeguineae* (144·6 g), two of the commoner Meliphagidae in the *Eucalyptus* savanna around Port Moresby, is most remarkable.

TABLE 1

NON-PASSERINES.		
Nycticorax caledonicus	juv. 315	
Geopelia striata	46·4; 47·2; 47·0:	mean 46·7
Trichoglossus haematodus	119; 103;	mean 111
Centropus phasianus	280	
Dacelo gaudichaud	105	
Halcyon macleayii	43·0	
Halcyon sancta	30·8; 34·9:	mean 32·9
Tanysiptera galatea	juv. 40·0	
Merops ornatus	19·7; 26·4:	mean 23·1
PASSERINES.		
Lalage sueurii	25·8 ♂; 20·7 ♀; 26·2 ♂	mean 24·2
Coracina papuensis	73; 69; 76:	mean 73
Coracina novaehollandiae	91	
Cisticola exilis	7·4; 7·1:	mean 7·3
Rhipidura leucophrys	21·0	
Monarcha melanopsis	21·7	
Microeca leucophaea	14·0; 12·0:	mean 13·0
Microeca flavigaster	11·2	
Colluricincla harmonica	73	
Artamus leucorhynchus	36	
Aplonis cantoroides	adults 48·7; 57·4; 51·2:	mean 52·4
	juvs. 47·0; 50·2; 42·1; 47·8; 45·2:	mean 46·5
Oriolus szalayi	99	
Cracticus mentalis	91·2; 88·7; 85·0; 100:	mean 95·0
Corvus orru	555	
Meliphaga flavescens	15·5; 16·6; 14·8:	mean 15·6
Meliphaga analoga	20·2	
Philemon novaeguineae	144·1; 145·0;	mean 144·6
Lonchura caniceps	8·1	

The number of birds utilising man-made perches, particularly electricity cables, was such a striking feature of the area that from mid-April to the end of June records of the type of perch utilised were kept, and the results are given in Table II. Eight types of perch are distinguished, of which the first four, "Bare Trees", "Leafy Trees", "Shrubs" and "Grass" are regarded as natural while "Wires", "Buildings" and "Fences & Posts" are clearly man-made. The last category "Ground" is somewhat ambiguous, since most of the birds quoted in this category were in fact met either on roads or their verges. Only species with a minimum of five encounters are considered. Although the total numbers of perchings recorded give some indication of relative abundance, it must be pointed out that only non-flying birds were counted. Such species as *Trichoglossus haematodus, Hirundo tahitica, Merops ornatus* and *Corvus orru* were observed far more frequently in flight than perched while *Collocalia vanikoriensis* was never met perched (and is therefore not included in Table II) but was quite commonly seen in flight. On the other hand the inclusion of sightings on the ground gives a better idea of the abundance of some species, for example the ground figures for *Geopelia striata* and *Lalage sueurii*. In any case the numbers quoted for natural situations and the ground will include some individuals that are feeding rather than just perching, whereas man-made situations will offer little opportunity for food, only a watch point. Again, it is fully appreciated that birds are most conspicuous when perched on wires, least so in leafy trees: the figures given

cannot therefore claim to be more than an indication of relative abundance and many species will perch more often in leafy trees than they are credited with doing. One case in point is the Wood Swallow, *Artamus leucorhynchus,* which almost always perches on exposed sites, wires or bare trees, but moves to roost in leafy trees. Just before dusk quite large numbers, between fifty and a hundred, were sometimes detected, closely packed and touching one another, just inside the canopy of tall trees. But such roosting counts have been omitted from the data in Table II and so also have those for a mixed roost of the two orioles *Oriolus szalayi* and *Sphecotheres vieilloti* and glossy starling *Aplonis cantoroides.*

TABLE 2

Species	Perching situations: Percentage utilisations								Total
	Bare trees	Leafy trees	Shrubs	Grass	Wires	Posts/ fences	Build- ings	Gnd.	Enco- unters
Accipiter sp.*	—	—	—	—	29	—	—	71	7
Rallus philippensis	—	—	—	—	—	—	—	100	7
Geopelia humeralis	33	67	—	—	—	—	—	—	6
Geopelia striata	12	4	—	—	14	—	—	70	232
Trichoglossus haematodus	8	92	—	—	—	—	—	—	94
Cacomantis variolosus	25	75	—	—	—	—	—	—	16
Centropus phasianinus	—	7	9	11	—	1	—	72	71
Dacelo leachii	27	50	—	—	23	—	—	—	76
Halcyon macleayii	39	—	—	—	17	44	—	—	18
Halcyon sancta	7	16	3	—	60	14	—	—	107
Merops ornatus	29	27	5	—	11	16	—	12	181
Eurystomus orientalis	87	—	—	—	13	—	—	—	8
Hirundo tahitica	63	—	—	—	13	—	24	—	75
Lalage suerii	3	46	—	—	—	—	—	51	123
Coracina novaehollandiae	11	74	—	—	7	7	—	1	101
Coracina papuensis	41	55	4	—	—	—	—	—	22
Saxicola caprata	11	8	44	—	26	—	—	11	27
Malurus alboscapularis	—	—	—	70	20	—	—	10	10
Cisticola exilis	9	—	—	54	37	—	—	—	48
Rhipidura leucophrys	7	5	5	3	12	6	12	50	102
Microeca flavigaster	62	29	—	—	9	—	—	—	77
Microeca leucophaea	53	12	5	2	7	5	—	14	62
Colluricincla harmonica	11	86	—	—	3	—	—	—	28
Artamus leucorhynchus	30	3	—	—	67	—	—	—	129
Aplonis cantoroides	35	5	6	—	54	—	—	—	87
Mina dumonti	64	36	—	—	—	—	—	—	22
Oriolus szalayi	4	96	—	—	—	—	—	—	59
Sphecotheres vieilloti	1	99	—	—	—	—	—	—	75
Cracticus mentalis	25	66	—	—	9	—	—	—	57
Corvus orru	32	16	—	—	—	—	—	52	25
Chlamydera cerviniventris	—	100	—	—	—	—	—	—	21
Nectarinia jugularis	—	6	60	14	14	6	—	—	15
Meliphaga flavescens	23	77	—	—	—	—	—	—	49
Philemon novaeguineae	17	83	—	—	—	—	—	—	55
Lonchura caniceps	2	1	1	59	3	22	—	12	547
Lonchura castaneothorax	20	3	—	77	—	—	—	—	35
Totals 36	30	29	10	8	21	9	2	13	
%	83	80	28	22	58	25	6	36	

* Probably *A. fasciatus,* in all sightings.

A few features of Table II may be picked out. The Fawn-breasted Bowerbird *Chlamydera cerviniventris,* although not very common, was only observed

(except in flight) perching within the canopy of leafy trees and is the only bird exclusive to that situation. The only other species found exclusively in one perching situation (the ground, not surprisingly), is the Banded Land Rail *Rallus philippensis*, where five of the seven encounters were on dry roadsides. By contrast only the Willie Wagtail *Rhipidura leucophrys* was encountered in all eight types of perching situation, though 50% of the encounters were on the ground. Species showing a marked preference (more than 50% of encounters) for bare trees are *Hirundo tahitica, Microeca flavigaster, M. leucophaea* and *Mina dumonti* (the first three insectivores, taking prey in flight); for leafy trees *Trichoglossus haematodus, Cacomantis variolosus, Coracina novaehollandiae, C. papuensis, Colluricincla harmonica, Oriolus szalayi, Sphecotheres vieilloti, Cracticus mentalis, Chlamydera cerviniventris, Meliphaga flavescens* and *Philemon novaeguineae* (all essentially canopy feeders); for shrubs only *Nectarinia jugularis*; for grass *Malurus alboscapularis, Cisticola exilis* and the two graminivores *Lonchura caniceps* and *L. castaneothorax*. As for man-made situations no species show preference for buildings, or posts and fences, but three, *Halcyon sancta, Aplonis cantoroides* and *Artamus leucorhynchus* (of rather mixed feeding habits) show a preference for overhead wires and almost 60% of all the species involved utilise them to some extent. Species showing preference for the ground are *Accipiter* sp., *Geopelia striata, Centropus phasianinus, Rallus philippensis, Lalage sueurii* and *Corvus orru*, all of which are ground feeders to some extent, the *Accipiter* appearing to be somewhat of a scavenger of road-casualty toads, rather like *Milvus migrans* in Africa.

It is noteworthy that, with the possible exception of *Meliphaga flavescens,* all the leafy tree perchers have particularly loud voices, the only other really noisy species being *Dacelo leachii*, with which in any case exactly 50% of encounters were in this situation. It is also worth noting that *Hirundo tahitica*, in contrast to swallows elsewhere, prefers to perch on bare trees rather than wires, but was not infrequently seen on buildings, notably on the struts supporting an open roof over the University Forum.

Table II contains five pairs of congeneric species and the number of times each one of a pair was sighted certainly gives a good indication of relative abundance in the study area. Perching differences are also well reflected by the figures. Thus, of the two *Geopelia* species, *humeralis* is much less common and does not appear on roadsides like *striata* but tends to remain concealed in leafy trees. *Halycon sancta*, migrant from Australia and New Zealand where overhead wires will have been part of its environment for a long period, has a distinct preference for this situation, while *macleayii* prefers a lower perch like a fence. Both *Coracina novaehollandiae* and *Microeca leucophaea* appear more catholic in their choice of perches than their congeners *C. papuensis* and *M. flavigaster*, while a Mannikin perched in a bare tree was much more likely to be *L. castaneothorax* than *L. caniceps*.

Finally, it may be remarked that the study revealed that, with the possible exception of the semi-natural ground situation, overhead wires were the only man-made perches which could be considered as a substantial attraction for the birds of the campus and its surroundings.

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The characters and range of *Pogoniulus chrysoconus extoni* (Layard), 1871

by P. A. Clancey

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The races of the small barbet *Pogoniulus chrysoconus* (Temminck) of the savannas of Ethiopian Africa were considered by Grant (1915), Sclater (1924), Macdonald (1938), Chapin (1939) and White (1965). Mackworth-Praed and Grant (1955) dealt with the eastern and southern races, Clancey (1961) reviewed the variation evident in the southern African populations in some detail, and the local situation in Zambia and Rhodesia was considered by Irwin and Benson (1967). The arrangements of White and Mackworth-Praed & Grant are based on the conclusions of Macdonald, checked against British Museum and other material, while Sclater followed Grant.

Ross (1970), in his recent interesting exercise on the southern African populations of both *P. chrysoconus* and *P. pusillus* (Dumont), demonstrates that a proportion of the South African population of the former has the coronal patch orange-yellow or bright orange as opposed to yellow, and that there is a distributional hiatus between the southern population and those occurring on the Rhodesian plateau, west to northern South-West Africa and Angola. These findings suggested to me that the current wide application of the name *Barbatula extoni* Layard, 1871: Kanye, south-eastern Botswana, to the populations of this barbet occurring as far north as the plateau of Angola (Traylor 1963), Zambia (Benson *et al.* 1971), south-eastern Zaire, and western and southern Tanzania (Mackworth-Praed & Grant, *loc. cit.*) was almost certainly incorrect and that the subspecies *P. c. extoni* was probably best restricted to south-eastern Botswana, the Transvaal south of the Limpopo R. valley, and north-western Orange Free State.

Through the courtesy of Dr. A. C. Kemp, Ornithologist of the Transvaal Museum, Pretoria, I have been able to examine in the Durban Museum a series of one hundred Transvaal specimens of *P. chrysoconus* collected since 1960 by Mr. O. P. M. Prozesky, forming part of the extensive material commented on by Ross. Careful study of this long series in conjunction with the skins in the Durban Museum shows conclusively that *P. c. extoni* requires to be restricted to south-eastern Botswana at Kanye and Gaborone, the Transvaal and the north-western Orange Free State. These southern populations of *P. chrysoconus* differ markedly in series from samples of the populations occurring along the Moçambique littoral in being much larger, with wings of ♂♀ 61–67, *versus* 55–60·5 mm (see also Table I below), blacker above with the dark interstices over the dorsal head confluent, the frontal patch orange-yellow or orange in a proportion of specimens, and in being more olivaceous dusky below. Compared with material of the plateau populations from Rhodesia, west to South-West Africa and Angola they show no statistically significant difference in size, but differ appreciably on colour characters, exhibiting criteria comparable to those enumerated in the comparison with Moçambique littoral birds.

With the restriction of the use of the name *extoni* to the plateau population occurring south of *c.* 23° S., the paler populations with broader and whiter dorsal streaking, a more glaucous coloured rump and much lighter ventral surfaces present further north in southern Africa (north of *c.* 21° S.) make it necessary to use the name *P. c. rhodesiae* Grant, 1915: Chambezi

Valley, north-eastern Zambia. When recognised by workers, *rhodesiae* has been generally utilised for the populations of high rainfall regimes extending from the plateau of Angola, east across the northern half of Zambia and the Katanga (Zaire) to northern Malawi and western and southern Tanzania. Chapin (1939) mentions it as ranging to the Ruzizi Valley. In my revision of the southern African populations I brought the range of *rhodesiae* south to the miombo biome of Rhodesia. While it is possible to demonstrate that the xeric elements present in southern Angola and northern South-West Africa, east to the Caprivi Strip, northern Botswana and the western edge of Rhodesia are ventrally paler than Zambian topotypes of *rhodesiae*, I believe that the essential facts of the variation are not lost by merging the several xeric populations grouped by me in *extoni* in 1961, in an enlarged subspecies *rhodesiae*. *P. c. extoni* as here interpreted was scarcely represented in collections when I discussed the species fourteen years ago, and its characters as defined in this note were not appreciated on the basis of the small and unsatisfactory samples then available.

The characters and ranges of the subspecies forming the *extoni* group of forms will now stand as follows:

(a) *Pogoniulus chrysoconus extoni* (Layard), 1871: Kanye, south-eastern Botswana

Frontal patch chrome or light cadmium yellow to more orange and even flame scarlet; upper-parts sooty black, coarsely streaked with greenish white, the head-top often almost wholly sooty black; rump dull greenish. Below, with throat Sea-foam Green (Ridgway, 1912, pl. xxxi), the breast buffish Reed Yellow (pl. xxx). Size large: 21 ♂♀ from south-western Transvaal with wings 61–67 mm.

Range: South-eastern Botswana, the Transvaal south of 23° S. lat., and north-western Orange Free State.

Note: Of the Transvaal samples studied 20 per cent had the frontal patch markedly orange or pale scarlet.

TABLE I

The wing-length variable in Transvaal samples of *Pogoniulus chrysoconus extoni*

Localities	*n* ♂♀	*range*	*m*	*SD*
S.W. Transvaal: Barberspan, Groot Marico, Zeerust, Swartruggens, Rustenburg, etc.	21	61–67	63·7	1·64
Northam	7	62–67	64·0	2·07
Derdepoort	12	61·5–66	63·1	1·34
Ellisras	7	61·5–67·5	64·2	2·00
Magaliesberg	17	63–67	64·9	1·44
Hartebeestpoort Dam	14	61·5–67·5	64·0	1·92
Hanglipberg	10	61–66	63·8	1·65
S.E. Transvaal: Nelspruit, Malelane, Barberton, etc.	10	60–65	62·8	1·32
Kruger National Park	4	59–64·5	61·5	2·27

The drop in size shown by the south-eastern Transvaal and Kruger National Park samples should be noticed. The single Kruger National Park specimen with a wing as low as 59 mm (T.M. No. 35,813) likewise exhibits the pale ventral colouration of the Mocambique littoral race, *P. c. dryas*.

(b) *Pogoniulus chrysoconus rhodesiae* Grant, 1915: Chambezi Valley, north-eastern Zambia

Frontal patch deep chrome yellow. Upper-parts paler than in *extoni*, the streaking whiter and broader, and head-top always broadly streaked white;

rump paler and more glaucous. Below much paler; throat Martius Yellow (pl. iv), and breast about Massicot Yellow (pl. xvi) or more buffy. Wings with brighter yellow surfaces. Size ranging smaller: wings of 20 ♂♀ from Rhodesia and Zambia 61–66, m. 62·6, SD 1·43 mm.

Range: Angola and northern South-West Africa, east to the Caprivi Strip, northern and north-eastern Botswana, the plateau of Rhodesia, Zambia, the Katanga (Zaire), northern Malawi, and western and south-western Tanzania, thence north to the Ruzizi Valley.

(c) *Pogoniulus chrysoconus dryas* Clancey and Lawson, 1961: Panda, Inhambane, Moçambique

Similar to *rhodesiae* above, but on the underside paler over the throat, this merging insensibly into the lighter breast which exhibits little or no buffish overlay. Size much smaller: wings of 12 ♂♀ 55–60·5, m. 58·4, SD 1·88 mm.

Range: Moçambique, northern Rhodesia west to about the Kariba Basin, southern Malawi, and Southern Province, Tanzania. Taken at Nuanedzi, Kruger National Park, eastern Transvaal, on one occasion (24 November 1960).

(d) *Pogoniulus chrysoconus mayri* White, 1946: Dundo, Lunda, Angola.

Generally with less starkly whitish streaking to the dorsum than in the case of *rhodesiae*. Below, with the throat slightly deeper yellow and the breast more overlaid with yellowish buff or ochraceous. Size as in *dryas:* wings of ♂♀ 55–60 mm (from original description).

Range: The Kasai, Zaire, and Lunda district, Angola.

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Another specimen of *Neodrepanis hypoxantha*

by C. W. Benson

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Salomonsen (1965: 108–110) gave an account of the nine specimens of this species, originally distinguished by him (1933), or subsequently, from those of the better known *N. coruscans* Sharpe. A tenth was reported by Benson (1971: 3).

Tristram (1889: 212) listed a ♂ specimen of *N. coruscans* from east of Antananarivo (=Tananarive), collected by W. D. Cowan in July 1881. Its

particulars were similar to those given by Salomonsen (1933) for the type of *N. hypoxantha,* also a ♂. Canon Tristram's collections are in the Merseyside County Museums (formerly City of Liverpool Museums). I have had the loan of the specimen, and there is no doubt that, as I had suspected, it belongs to *N. hypoxantha,* not *coruscans*.

One of the characters distinguishing *hypoxantha* from *coruscans* is its shorter bill. Unfortunately the tip of the bill of Tristiam's specimen has been broken off. Nevertheless, the immaculate bright yellow underparts and the attenuated shape of the outermost primary clearly show it to be an example of *hypoxantha*.

As reported by Benson (1971: 3), the ♂ *hypoxantha* in the University Museum of Zoology, Cambridge, is in full breeding dress, and with bare skin on the sides of the head, encircling the eye, apparently fully developed. It is unfortunate that it bears no locality or date of collection, although according to the remarks by Salomonsen (1965: 110) with regard to a seasonal change of plumage, it was most probably collected in October or November. The three specimens in the British Museum (Natural History), Tring, consist of a ♂ and a ♀ collected by Cowan east of Tananarive in July 1881, which constituted the only material available to Salomonsen (1933), and a second ♂, collected by L. Lavauden in August 1929 at Fito, eastern Madagascar, and mentioned in Salomonsen's later paper (1965: 109).

Unlike the ♂♂ in Liverpool and Cambridge, the two in Tring do not have entirely immaculate yellow underparts, even though this is the initial impression. The feathers of the chin to chest in fact have inconspicuous olive tips. This applies too to the ♀, in which the shafts of the feathers of this region are also mostly olive. The July ♂ in Tring has the upperparts mainly olive, although there are some metallic blue feathers on the mantle downwards. The August ♂ is more advanced into breeding dress, although the crown and mantle are still mainly olive. The Liverpool specimen, although dated as early as July, has olive confined to the crown. The Cambridge specimen (undated) shows no olive at all, and is the only one examined which has bare skin on the sides of the head.

It should be emphasised that the Liverpool and Cambridge specimens, unlike those in Tring, lack any sign of olive tips to the feathers of the chin to chest (except for slight traces on one side, only, in the Liverpool one). This would appear to represent a difference between the breeding and off-season plumages of the male, additional to the presence of bare skin on the sides of the head and wholly blue upperparts. Presumably the inconspicuous olive tips are not lost by abrasion but in the course of the moult from the off-season to the breeding dress.

Milon *et al.* (1973: 184) regard *N. hypoxantha* merely as a subspecies of *coruscans*. However, they probably had not seen a specimen of *hypoxantha* (none apparently exists in France, nor could I find one during a visit to the O.R.S.T.O.M. museum in Tananarive in November 1972). In fact differences in structure and colour are such that it is impossible to believe that the two forms can be conspecific. In any case in all probability they are sympatric: Fito, where Lavauden collected *hypoxantha,* is between Maroantsetra and Fanova, from both of which there are specimens of *coruscans* in Tring (for map, see Rand, 1936: 147).

Indeed, it is surprising that *hypoxantha* was not recognised earlier. So distinguished a worker as Gadow (1884: 2) for example, obviously confused the two species. Using the two specimens of *hypoxantha* collected by Cowan,

he described the ♂ and ♀ of *coruscans* as having underparts "vivid yellow", and considered the type of *coruscans* to be immature. In fact, it is approaching full breeding plumage, olive on the upperparts only being apparent on the crown. It is undated, but might have been collected in August (the sequence of plumage in the two species, as discussed by Salomonsen, 1965, would appear to be very similar).

Salomonsen felt certain that *hypoxantha* still survived. Reduction of the forests of eastern Madagascar continues, but one cannot but believe that *hypoxantha* is indeed still there. It is a species presumably associated with dense evergreen forest, the predominant habitat (originally at least) at Fito, for example. Some forest species are extremely elusive, which is probably the case with *hypoxantha*, and it may also be uncommon. Similar considerations seem to apply to two other species of eastern Madagascar, almost certainly also forest dwellers, viz. *Phyllastrephus tenebrosus* (Stresemann) and *Newtonia fanovanae* Gyldenstolpe. Like *Neodrepanis hypoxantha*, they were not found by the Mission Zoologique Franco-Anglo-Américaine à Madagascar, although it was in the field for about two years (Rand, 1936: 143). *Newtonia fanovanae*, an extremely distinct species, is still only known from the type, and *P. tenebrosus* from some five specimens collected about 1925 (Rand, 1936: 431, 453; Benson, in prep.). Incidentally, Milon *et al.* (1973: 198) seem to regard the latter as merely a subspecies of *P. madagascariensis* (Gmelin), but it is certainly a valid species, its nearest relative *P. zosterops* (Sharpe).

Thus there are these three species in eastern Madagascar which probably all still survive, but escape notice, due probably to the nature of their habitat and their sparseness. Rand himself (in Greenway, 1967: 28) also believed that *N. hypoxantha* would be found again. There should be no difficulty in distinguishing it from *coruscans* in life, without recourse to collecting, assuming that a reasonable view can be obtained, since at all seasons the underparts are a vivid, immaculate yellow, in contrast to the variegated appearance in *coruscans*. Milon *et al.* suggest that the ♂ of *hypoxantha* is also distinguishable from that of *coruscans* by its non-metallic greenish blue upperparts, but in fact they are a very similar metallic blue in both species.

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Some questionable records of Celebes birds

by C. M. N. White

Received 29th October 1974

Dr. Charles Hose resided in Sarawak as a civil servant from 1884 to 1907, making extensive zoological collections including many bird skins. Much of his material seems to have been disposed of commercially, bearing printed labels which do not appear to have been written and attached in the field. These were common practices at that time. In 1895 he and his collectors visited the Minahassa region of north Celebes where he collected mammals and birds. He later (1903: 77–117) published a list of the birds collected. It included four species not otherwise known from Celebes, one of them, *Dicaeum hosei*, having been described as new by Sharpe in 1897. This note questions the provenance of these species.

In his paper Hose states that he arrived at Menado on 2 October and that his visit to Celebes lasted two months. However almost all the listed specimens are dated *September* to November so that his arrival must have been up to a month earlier. Yet, in recording *Macrocephalon maleo* he gives the date as 11 February, adding "this specimen I procured myself". Some rodents from his collection are dated 11 January according to Musser (1970, *Amer. Mus. Novit.* 2440: 27). All this indicates that the labels were not written in the field: one suspects that the date 11 really refers to the month November but was later interpreted as referring to the day of different months. It is curious that Hose himself did not notice these anomalies when writing his paper. He also lists a few specimens from Sangihe and Talaut islands obtained in October and one in November, but gives no information of how these were collected midway in his field work; nor does he explain how he and his collectors travelled between Borneo and Celebes. The bulk of the birds collected undoubtedly came from Celebes and were correctly labelled, but the above facts show how careless subsequent labelling could have permitted specimens from other sources to have been included in the Celebes collection. Comment can now be made on the questionable species.

Dicaeum hosei. Hose lists three specimens. Stresemann (1940: 53) has shown that the type and another specimen are *D. cruentatum nigrimentum*, common in Borneo and evidently mislabelled, whilst the third was from Celebes and is *D. nehrkorni*, wrongly identified. This was the first indication that birds of alien provenance had been added to the Celebes collection but Stresemann did not follow up his discovery by querying other species.

Rhipidura javanica nigritorquis. Hose lists one male from Menado. This subspecies is widespread in the Philippines including Palawan and Sulu Islands. Although Stresemann (1940: 86) commented that this was perhaps a completely new extension of range, another error in labelling seems more plausible. The subspecies does not occur in Borneo but Hose and his collectors may have called at Palawan or the Sulu Islands on their way to Celebes or Hose might have received a specimen from his friend A. H. Everett, who collected in the Philippines and Borneo during frequent breaks in his career as a civil servant in Sarawak. There seems no reason to suppose that this species might occur as a vagrant, and the record is too doubtful to justify including the species in the list of birds of Celebes.

Eudynamys scolopacea chinensis. Hose lists one female from Likupang. Stresemann (1941: 84) comments that it agrees with examples from southern

China and must have been a vagrant which may have reached Celebes via the Philippines. There are however no records from the Philippines of *E. s. chinensis* as an occasional migrant, although it has been recorded from Malaya, Natuna Islands and Sarawak. The Celebes specimen may be a genuine vagrant but it seems unsafe to accept it as such in view of the history of anomalous specimens in Hose's collection.

Fregata andrewsi. Hose lists two females under the name *F. aquila*. At that time four species were confused under the latter name. Lowe (1924: 306) lists one of these specimens and identifies it as *F. andrewsi*. Peters (1931: 95) includes Celebes in the range of the latter, presumably following Lowe. Stresemann makes no reference to *F. andrewsi*. in Celebes. He probably overlooked Lowe's re-identification of one of the specimens, and assumed that all old Indonesian records of *F. aquila* are really referable to *F. minor*. *F. andrewsi* occurs at times on the coast of Sarawak and Smythies (1960: 124) reports that seven specimens have been collected there. A large marine bird of this type could no doubt wander to Celebes, and if there were no other questionable birds in Hose's collection from Celebes, the record would probably be acceptable. But since the coast of Sarawak is perhaps the only locality where this species has been regularly recorded away from its breeding places, there is a strong element of doubt about the origin of the Celebes specimens.

In questioning the provenance of these birds in Hose's collection from Celebes, it should be added that I have no knowledge of any similar problems relating to his large collections made in Borneo. Most of the collection from Celebes was clearly correctly labelled, but there was an error in the case of *Dicaeum hosei*, and almost certainly in the three further cases discussed above.

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Undescribed land birds from the Cook Islands, Pacific Ocean

by D. T. Holyoak

Received 19th August 1974

During a survey of the birds of the Cook Islands from July–September 1973, the birds of the islands of Atiu, Mitiaro, Mauke and Mangaia were investigated for the first time. Series of seven land birds that apparently represent undescribed forms were collected. This paper gives descriptions of these forms, in advance of a fuller report on their biology and that of the other birds seen.

The specimens collected will be lodged in the National Museum of Natural History, Washington, D.C., excepting one paratype of each new form given to the British Museum (Natural History).

Ptilinopus rarotongensis goodwini subsp. nov.

Description. Adult ♂ and ♀ (sexes similar): differ from *P. rarotongensis* of

Rarotonga, described by Hartlaub & Finsch (1871), in having only a few orange feather tips in the centre of the belly instead of a much larger patch of carmine-red; otherwise very similar. Although only four specimens from Rarotonga were available for comparison, all with the carmine-red patch on the belly, this feature was also noticed on other birds watched at close range on Rarotonga which were not collected.

Type. ♂ with enlarged testes, Atiu, Cook Islands, 14 September 1973. Collected by D. T. Holyoak, field no. 188.

Measurements of type. Wing 134, tail 86, exposed culmen 11, tarsus 22 mm.

Material examined. Besides the type, two ♂♂ with enlarged testes collected at the same locality, 4 September; one ♂ with enlarged testes, two ♀♀ with ovae a little enlarged, and one unsexed bird collected at the same locality, 14 September; a ♂ and ♀ both with enlarged gonads collected at the same locality, 15 September. These all agree with the type in colouration; their measurements are: ♂♂, wing 132, 133, 134, 138, tail 84·5, 87·5, 87·5, 89·5, culmen 9·5, 10, 11, 11, tarsus 24, 25, 25, 25; ♀♀, wing 129, 131, one moulting, tail 82, 84, 85, culmen 10·5, 10·5, 10·5, tarsus 23·5, 24·5, 25; unsexed, wing 128, tail 85, culmen 11, tarsus 25·5 mm.

Name. Named for Derek Goodwin in recognition of his work on pigeons.

Notes. *P. r. goodwini* was common almost everywhere there were trees on Atiu, including the *makatea* region, lowlands inside the *makatea* and higher up in the middle of the island.

Collocalia sawtelli sp. nov.

Description. Adult ♂ and ♀ (sexes similar): ear coverts, forehead, crown and nape black with slight green gloss; mantle, back and rump blackish-brown; shorter upper tail coverts grey-brown with light grey-brown feather bases that are partly exposed; longer upper tail coverts and rectrices blackish-brown to black; wing coverts black with slight green gloss; remiges black with hidden areas blackish-brown; whole underside of body brown-grey; underwing coverts and underside of remiges blackish-brown.

Soft part colours (recorded one day after collecting): bill black, iris blackish-brown to black; legs and feet dark grey-pink or blackish-pink, claws black.

Type. ♀ with small gonads collected in nesting cave, Annataketake Cave, Atiu, Cook Islands, 4 September 1973. Collected by D. T. Holyoak, field number 173.

Measurements of type. Wing 120, tail 55, exposed culmen 4·1, tarsus 9·0 mm.

Material examined. In addition to the type, two ♂♂ and four ♀♀ collected at the same locality the same day, and one ♀ collected at the same locality on 15 September 1973. Measurements: ♂♂, wing 117·5, 118, tail 53, 54·5, culmen 4·1, 4·8, tarsus 9·1, 9·6; ♀♀, wing 115·5, 118, 118·5, 118·5, 119, tail 53, 55, 55·5, 56 (one missing), culmen 3·7, 3·9, 4·0, 4·1, 4·1, tarsus 9·0, 9·1, 9·2, 9·4, 9·6 mm.

Name. Named for Mr. Gordon H. Sawtell, Secretary of the Premier's Department of the Government of the Cook Islands, who told me of this bird soon after my arrival in the Cook Islands and later gave valuable assistance in visiting Atiu and the Annataketake Cave.

Notes. This swiftlet is very similar in appearance to *C. leucophaea* of the Society and Marquesas Islands, although it is slightly darker than specimens of *C. leucophaea leucophaea* from Tahiti. However, whereas *C. leucophaea* nests

in shallow caves and under overhangs of rocky crags and does not echo-locate, *C. sawtelli* nests in the total darkness of deep caves and echo-locates with rapid, loud clicks. Nests of *C. leucophaea* are bulky structures built mainly of mosses whereas those of *C. sawtelli* are shallow cups of dry stems and leaves glued together with saliva which never hardens. As deep caves offering nest sites in total darkness are available to both subspecies of *C. leucophaea*, in Tahiti and the Marquesas Islands, but are not used (Holyoak 1974 and in press) it seems best to accord, *C. sawtelli* specific status.

Halcyon ruficollaris sp. nov.

Description. Adult ♂ and ♀ (sexes nearly alike). Forehead, crown and back of head blue-green with a few buff feathers at sides of forehead; ear coverts light turquoise; superciliary stripe buff, shading to orange-buff behind the eye; lores and cheeks blackish with turquoise feather tips; nape and upper mantle orange-buff, with narrow black half-collar across nape; lower mantle and back blue-green; rump, upper tail coverts and wing coverts deep turquoise; outer primaries black, other remiges black with deep blue outer webs; rectrices deep blue above, blackish beneath and on concealed areas; underside of body entirely white, except for an orange-buff suffusion across upper breast; this band is more distinct in the ♀ specimen than any of the ♂♂; under wing coverts white; underside of flight feathers blackish-grey. The type and another ♂ (no. 123) have narrow tips of pale buff to the median, greater and primary wing coverts that are lacking in the other specimens; these feathers have abraded tips and are probably retained from the immature plumage.

Soft part colours (recorded day after collecting): bill black with pale pink or greyish base on the underside; iris blackish-brown; legs and feet blackish-grey, soles of feet light yellow to yellowish flesh-colour.

Closer to *H. tuta* than to any other species, *H. ruficollaris* is orange-buff on the forehead, nape, superculium and upper breast where *H. tuta* is white. It also has a generally wider tip to the bill than *tuta* and other Polynesian species of *Halcyon*.

Type. ♂ with slightly enlaged testes, Mangaia, Cook Islands, 24 August 1973. Collected by D. T. Holyoak, field no. 124.

Measurements of type. Wing 97, tail 80, culmen from anterior edge of nostril 30·6, width of culmen at anterior edge of nostril 13·4, tarsus 17·0 mm.

Material examined. Besides the type, two ♂♂ and one ♀ collected on Mangaia on the same date, and an unsexed mounted specimen from Mangaia borrowed from the Cook Islands Museum, where it has been for perhaps fifty years. Measurements: ♂♂, wing 97·5, 99, tail 77·5, 77·5, culmen from nostril 29·9, 30·5, culmen width at nostril 13·0, 13·2, tarsus 17·2, 17·3; ♀, wing 101, tail 79, culmen from nostril 30·5, culmen width at nostril 14·0, tarsus 17·9; unsexed specimen, wing 99, tail 79·5, culmen from nostril 30·4, tarsus 18·0 mm.

Name. The name refers to the most distinctive feature of the species.

Notes. I found *ruficollaris* fairly common in the wooded *makatea* region at the north end of Mangaia, and also heard several in groves of trees inland. The usual call is a series of mewing, whistling cries, each consisting of a short note followed by a longer one: *ki-wow ki-wow ki-wow ki-wow*. A few softer chuckling notes were also heard. These calls differ from the noisy chattering of *H. tuta* on Atiu and Mauke and in the Leeward Society Islands (Holyoak 1974).

Halycon tuta atiu subsp. nov.

Description. Adult ♂ and ♀ (sexes similar): top of head white with a buff tinge, excepting a patch of blue-green feathers in middle of hind crown that extends on to middle of upper nape, and a variable number of small blue-green spots on feather tips of mid-crown; lores blackish; feathers around eye and stripe extending back from eye dull blue; lower nape and upper mantle white tinged buff with narrow black half-collar around nape; lower mantle, back, rump, upper tail coverts and wing dull blue-green to deep cobalt (varying individually); exposed upper parts of remiges and rectrices deep blue-green to deep cobalt, undersides and hidden parts blackish; underparts and underwing coverts entirely white, with faint buffy suffusion on breast and belly.

Colours of soft parts: bill black, except base of mandible which has a large patch of light grey-pink below; iris blackish-brown; legs and feet dark grey to blackish-grey, soles of feet yellow-grey.

Immature ♂: differs from adult in having forehead white with heavy streaks of blackish-brown; entire crown blackish-brown with dull blue feather tips and narrow buff streaks; supercilium pale buff; feathers of rump and upper tail coverts edged buff; wing coverts duller with narrow white fringes; underparts, especially flanks, with heavier buff suffusion. Soft part colours as in adult. Immature ♀ not examined.

Adults differ from those of other populations of *H. tuta* in having the crown mainly white, not blue-green with white confined to the forehead and supercilium. Similarly, the immature ♂ has more extensive light streaking on the forehead and crown.

Type. ♂ with enlarged testes, Atiu, Cook Islands, 15 September 1973. Collected by D. T. Holyoak, field no. 198.

Measurements of type. Wing 103·5, tail 77, culmen from anterior edge of nostril 31·7, width of culmen at anterior edge of nostril 12·5, tarsus 16·5 mm.

Material examined. In addition to the type, five were collected in the same locality, one on 4 September, one on 14 September and three on 15 September. Measurements: ♂♂, wing 94·5, 99, tail 72, 77, culmen from nostril 30·1, 31·0, width of culmen 12·7, 12·8, tarsus 16, 16; ♀♀, wing 98, 98·5, 100, tail 70·5, 70·5, 73·5, culmen from nostril 31·6, 32·5 (one damaged), width of culmen 13·3 (two damaged), tarsus 16, 16·5, 17 mm.

Notes. Common in the wooded *makatea* region of Atiu and in groves of trees inland.

Halcyon tuta mauke subsp. nov.

Description. Adult ♂ and ♀ (sexes similar): resemble *Halcyon tuta* populations of Raiatea, Bora Bora and Huahine in the Leeward Society Islands, but differ in having a buffy wash on the white feathers of forehead, supercilium, sides of neck, mantle, breast, belly and flanks, that is absent or much fainter in those populations.

Colours of soft parts: bill black with pale grey or grey-pink underside to all but tip of lower mandible; iris blackish-brown; legs and feet dark grey to black, soles of feet dull yellow.

Immature ♂ as immature from Leeward Society Islands, except for a stronger orange-buff suffusion on forehead, supercilium, sides of neck, mantle, belly, flanks, tips of rump feathers and fringes to wing coverts.

Soft part colours as in adult. Immature ♀ not examined.

Type. Adult ♀ with small gonads, Mauke, Cook Islands, 28 August 1973. Collected by D. T. Holyoak, field no. 140.

Measurements of type. Wing 99, tail 73·5, culmen from anterior edge of nostril 29·8, width of culmen at anterior edge of nostril 12·1, tarsus 16 mm.

Material examined. In addition to the type, eight other specimens collected at the same locality on the same day. Measurements: ♂♂, wing 93·5, 96, 97, tail 69, 70·5, (one abraded), culmen from nostril 30·4, 30·7, 30·7, width of culmen 11·6, 12·3, 13·0, tarsus 16, 16, 17 ; ♀♀, wing 95, 97, 98·5, 98·5, 99, tail 71, 71, 72, 72·5, 74, culmen from nostril 28·9, 29·6, 30·2, 30·6, (one damaged), width of culmen 12·2, 12·2, 12·4, 12·5, 12·6, tarsus 16, 16, 16, 16·5, 16·5 mm.

Notes. Common wherever there are trees on Mauke. The specimens of *H. tuta mauke* and *H. tuta atiu* were compared with large series of all other Polynesian kingfishers, and with specimens or descriptions of all other species of the genus *Halcyon.*

Acrocephalus vaughani kerearako subsp. nov.

Description. Adult ♂ (adult ♀ not collected): forehead, crown and nape uniform dark olive, shading to olive on mantle, and olive with tawny suffusion on back and rump; upper tail coverts light yellow-brown; rectrices dark brown, with narrow pale grey tips and narrow olive fringes that soon abrade; feathers around eye light yellow, extending forwards to nostril and backwards a little from the eye to form a short superciliary stripe; cheeks olive; chin, throat and breast pale yellow, shading to light yellow with tawny wash on belly and flanks; thigh feathers pale yellow-brown; under tail coverts pale yellow; remiges dark grey-brown, fringed pale brown on outer webs of primaries, olive on outer webs of secondaries, with pale grey fringes to inner webs and narrow pale grey tips to all but innermost secondaries; wing coverts olive with tawny suffusion; underwing coverts pale yellow.

Soft part colours (recorded one day after collecting): bill blackish with all but tip of lower mandible pink; inside of bill orange; iris dark brown to blackish-brown; legs and feet light blue-grey to blue-grey, soles of feet yellowish.

Type. Male with slightly enlarged testes, Mangaia, Cook Islands, 24 August 1973. Collected by D. T. Holyoak, field no. 132.

Measurements of type. Wing 76·5, tail 79·5, exposed culmen 16·1, tarsus 27·8 mm.

Material examined. Besides the type, two old unsexed specimens from Mangaia loaned by the Cook Islands Museum, Rarotonga, seven other ♂♂ collected on the same day as the type at the same locality and another unsexed bird collected then and preserved in spirit. Measurements (excluding spirit specimen): ♂♂, wing, 76, 76, 76, 76, 77·5, 78, 78, tail 76·5, 78, 78, 78·5, 79, 79·5, 79·5, exposed culmen 15·6, 15·6, 16·0, 16·2, 17·3, (two damaged), tarsus 27·7, 27·7, 28·1, 28·1, 28·1, 28·3, 28·9; unsexed, wing 76·5, 78·5, tail 76·5, 78·5, exposed culmen 15·0, 16·8, tarsus 27·5, 28·6 mm.

Name. 'Kerearako' is the name by which this warbler is known to the people of Mangaia.

Notes. Plentiful in the trees and bushes in and around the *makatea* region of Mangaia, and perhaps also in bushy areas of the interior. *Acrocephalus*

vaughani was hitherto known from Rimitara in the Austral Islands (*A. v. rimitarae*), Pitcairn Island (*A. v. vaughani*) and Henderson Island (*A. v. taiti*), these forms having been described by Murphy & Mathews (1929). From these forms *A. v. kerearako* and the form from Mitiaro described below differ strikingly in showing no tendency to albinism, in having much heavier yellow lipoid pigmentation producing yellow underparts and olive upperparts, and in measurements.

Acrocephalus vaughani kaoko subsp. nov.

Description. Adult ♂ and ♀ (sexes similar): slightly larger than *A. v. kerearako*, differing in having entire upperparts and fringes to remiges and rectrices duller, with only slight tawny tinge on back and rump: underparts paler yellow, with indistinct streaking of light grey-brown present on throat and breast; sides of breast, flanks and sides of belly more or less suffused with light brown; thigh feathers light brown. Soft part colours as in *A. v. kerearako*.

Type. ♂ with enlarged testes, Mitiaro, Cook Islands, 17 September 1973. Collected by D. T. Holyoak, field no. 213.

Measurements of type. Wing 80, tail 76, exposed culmen 17·6, tarsus 28·3 mm.

Material examined. Besides the type, five ♂♂, two ♀♀ and two unsexed birds collected the same day at the same locality. Measurements: ♂♂, wing 78, 78, 80, 80, 80, tail 75·5, 76, 78·5 (two damaged), exposed culmen 16·5, 16·7, 17·6, 18·7 (one damaged), tarsus 26·5, 26·8, 27·5, 28·6, 28·8; ♀♀, wing 76, 78·5, tail 69, 74, exposed culmen 16·5, 17·1, tarsus 27·4, 27·8; unsexed, wing 79, 79·5, tail 73, 74, exposed culmen 17·6 (one broken), tarsus 27·2, 28·5 mm.

Name. 'Kaoko' is the name by which this warbler is known to the people of Mitiaro.

Notes. Abundant in trees, bushes and tall herbaceous vegetation in all parts of Mitiaro.

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Further expansion of the Fieldfare in the Rumanian Carpathians

by Dan Munteanu

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In a short paper published nine years ago (Munteanu, 1966) I reported finding the Fieldfare *Turdus pilaris* as a breeding bird in the north-eastern part of the East Carpathians of Rumania, namely at Manastirea Humorului (=Humor Monastery), locality No. 1 in the map Fig. 1.

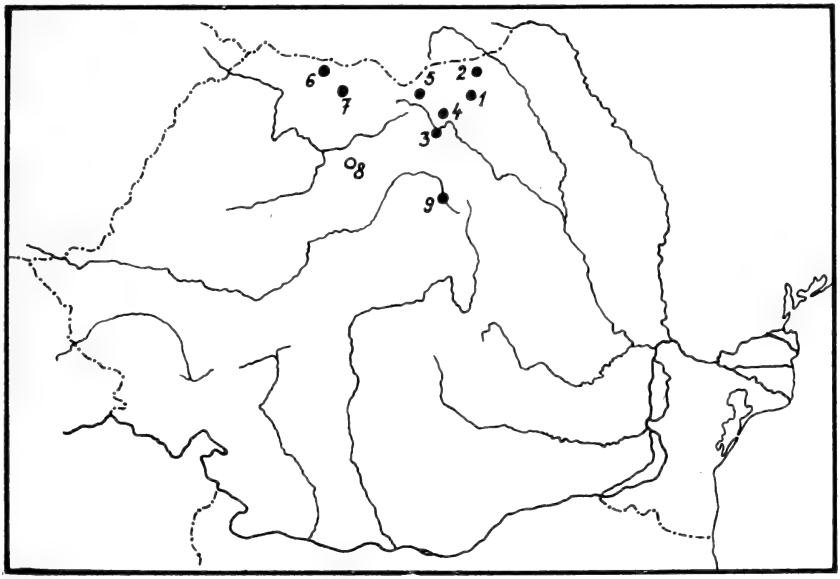

Figure 1. Breeding localities of *Turdus pilaris* in Rumania.

Since then, nests and birds in juvenile plumage have been found both at the Humor Monastery and elsewhere in northern Rumania as follows (1968–1971): at Radauti (2) and Vatra Dornei (3), in parks and cemeteries (as previously noted by me in 1971); Al. Filipascu (1973) also recorded several pairs in the above mentioned localities and, in addition, observed the species during summer at Pojorita (4) and Lucina (5); I. Béres (1973 a, 1973 b) succeeded in finding nests in the Maramures Depression, at Sighetul Marmatiei (6) and Ieud (7); and finally, I. Korodi Gál tells me that he has recently seen juvenile specimens at Arcalia (8) near Bistrita-Nasaud.

In view of these records, it can be concluded that the Fieldfare is now widespread over the entire northern part of the Rumanian Carpathians as well as such lower-lying neighbouring areas as the Suceava Plateau (Radauti, 300 m a.s.l.) and, probably, also the Bistrita Hills, (Arcalia, 320 m). Moreover, the southward expansion of range along this "ecological channel" of the Carpathians is seemingly continuing as, on 3 July 1973, I found a pair with three fledglings at Borzont (9) in the Guirgeu Depression, Harghita District, at 720 m altitude, in sallows bordering the river Mures. I had investigated that area the preceding year (1972) without result, so that 1973 can be definitely stated as the year of colonization.

Analysing the data accumulated in the last few years, one can add that in the Rumanian Carpathians the species has not been found breeding in forests but only in heterogeneous tree vegetation (often within man-made biotopes or even towns). There are four principal types of habitat, namely: (i) parks and cemeteries where Norway spruce is predominant (Radauti, Vatra Dornei); (ii) Scots pine plantations (Lucina, Pojorita); (iii) orchards (Humor Monastery, Ieud); and (iv) riverside coppices of sallows and/or poplars (Sighetul Marmatiei, Borzont). All the places mentioned are situated at a rather low altitude (between 270 m at Sighetul Marmatiei and 820 m at Vatra Dornei) and even when in mountainous country are always in the valleys or depressions.

As for breeding phenology, it has been ascertained that the eggs are usually laid between 20 April and 13 May but occasionally later, and that the young usually fledge between 22 May and 20 June, although fledglings from later clutches have been noted right at the end of June.

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On the material evidence of *Hieraaetus pennatus* in southern Africa

by R. K. Brooke

Received 16th September 1974

The occurence of the Booted Eagle *Hieraaetus pennatus* (Gmelin) in southern Africa has been known for 150 years. It was studied by Donnelly (1966) whose work was overlooked by Moreau (1972), perhaps through the relative obscurity of its place of publication. We now know that it breeds in the Cape Province (Martin & Martin, 1974, and in press for *Bokmakierie*) but believe that the majority of birds collected or seen in southern Africa are of palaearctic origin. It does not seem to be possible to distinguish palaearctic and southern Ethiopian breeding birds on morphological characters and, indeed this is not to be expected if *H. pennatus* has only been breeding in the Cape Province for a few hundred years. Following work on *Aquila nipalensis* and *A. pomarina* (Brooke *et al.*, 1972), most specimens of *H. pennatus* held in southern African museums have now been critically examined and this paper reports the findings. In addition, the nomenclature and distribution of subspecies are considered and, in the concluding section of the paper, the data on food taken by the species in southern Africa are reviwed.

TAXONOMY AND NOMENCLATURE

Figure 1 in Brooke *et al.* (1972) shows that eagles placed in *Hieraaetus* Kaup, 1844, with genotype *Falco pennatus* Gmelin, 1788, have relatively longer hind claws (over 105 % of the length of the culmen) than those placed

Aquila Brisson 1760 with genotype *Falco chrysaetos* L., 1758, whose hind-claws are 80 – 105 % of the length of the culmen. This had been accepted by many authorities, e.g. recently Vaurie (1963) and Brown & Amadon (1968), despite difficulties of definition. It is accepted here.

Hartert (1914) gave a full synonymy for *H. pennatus* in which he recognised no races. Since then, *H. p. harterti* Stegmann, 1935; Kyakhta, southwestern Transbaikalia, Siberia, has been described. It appears from Vaurie (1963) and Dementiev & Gladkov (1966) that the breeding range is disjunct, the main area being from extreme southwestern Europe to the Turkmen S.S.R. and the second area being around Lake Baikal. There is a clinal increase in wing length from west to east according to these authors and also in the proportion of dark to pale phase birds. Since the Baikal region birds are absolutely longer winged than those of western Europe (Table 1c), two races can be admitted. The type-locality of the species can either be regarded as France since the name is based on Brisson who wrote on French birds (Vaurie, 1963) or as Hungary as proposed by Grant & Mackworth-Praed (1934). It does not affect the argument of this paper but I believe that Vaurie (1963) is the better author to follow in respect of the type-locality of the species and thus of the nominate race.

TABLE 1

A. Data on specimens of *Hieraaetus pennatus peannatus* examined. All measurements in mm.

Date	*Place*	*Sex*	*Age*	*Wing length*	*Culmen length*	*Hind claw length*	*Phase*	*Museum*
10.5.33	Asab, S.W.A.	♂	ad.	345	20	23	dark	T.M.P.
24.2.09	Umtamvuna R., C.P./Natal boundary	♀	ad.	375	22	25	pale	T.M.P.
29.12.14	Krugersdorp, Transvaal	♀	ad.	425	26	31	pale	T.M.P.
28.11.15	Pretoria, Transvaal	♀	ad.	410	26	29	pale	T.M.P.
14.2.12	Pretoria	♀	ad.	380	25	28	pale	T.M.P.
24.12.01	Vryburg, C.P.	♀	ad.	410	25	30	pale	T.M.P.
14.10.29	Golden Valley, C.P.	o♀?	ad.	400	25	28	pale	A.M.G.
n.d.	Aliwal North C.P.	o♀?	ad.	400	24	29	pale	A.M.G.
n.d.	Transvaal	o♂?	ad.	385	24	27	dark	T.M.P.
19.8.37	Klipfontein, C.P.	♂	imm.	345	21	25	dark	T.M.P.
5.9.61	Griquatown, C.P.	♀	imm.	380	22	25	pale	E.L.M.
17.11.12	Matatiele, C.P.	♀	imm.	400	26	31	pale	T.M.P.
n.d.	Transvaal	o♀?	imm.	400	24	30	pale	T.M.P.
–.4.13	Durban, Natal	♂♀?	juv.	405	24	29	pale	D.M.
–.9.03	"Rhodesia"	o♀?	juv.	380	24	29	pale	T.M.P.
31.10.07	Bulawayo, Rhodesia.	o♀?	—	370	24	27	pale	N.M.B.
n.d.	Selukwe? Rhodesia.	♀	—	—	—	—	pale	N.M.B.
n.d.	Natal?	—	—	—	—	—	dark	N.M. PMB.
(n.d.	Roumania	o♂	juv.	330	22	25	pale	T.M.P.

B. Summary of measurements of birds of undoubted sex.

Wing length	*Culmen length*	*Hind claw length*
♂♂ 345, 345	20, 21	23, 25
♀♀ 375–425 av. (7) 397	22–26 av. (7) 24·6	25–31 av. (7) 28·4

C. Measurements from literature.

	Wing length	Culmen length	Source
H. p. pennatus			
♂♂	352–378 (361)		Brown & Amadon 1968
	353–390 (11: 369)	21–24 (27: 23·1)	Glutz *et al.* 1971
	352–386		Vaurie 1963
♀♀	375–403 (391)		Brown & Amadon 1968
	380–428 (11: 409)	24–26 (25·0)	Glutz *et al.* 1971.
	355–411		Vaurie 1963
H. p. milvoides			
♂♂	388–395		Brown & Amadon 1968
	380–395 (388)		Vaurie 1963
	370–412		Ali & Ripley 1968
♀♀	405–435 (420)		Brown & Amadon 1968
	405–435		Vaurie 1963
	385–423		Ali & Ripley 1968

D. Abbreviations

ad.	=	adult as defined in the last paragraph of Distribution
A.M.G.	=	Albany Museum, Grahamstown
C.P.	=	Cape Province
D.M.	=	Durban Museum
E.L.M.	=	East London Museum
imm.	=	immature
juv.	=	juvenal
n.d.	=	no date
N.M.B.	=	National Museum of Rhodesia, Bulawayo
N.M.PMB	=	Natal Museum, Pietermaritzburg
Rhod.	=	Rhodesia
S.W.A.	=	South West Africa
T.M.P.	=	Transvaal Museum, Pretoria
–	=	data not available

East of the Caspian Sea birds are longer winged and intermediate in size between west European birds and those of the Baikal region. They provided the type of *H. p. albipectus* (Severtzov), 1873: Turkmen S.S.R. They are placed in *H. p. milvoides* (Jerdon), 1839, by Dementiev & Gladkov (1966) since their range is essentially continuous with birds to the west, whereas there is a big break to the east, it seems better to place Turkmen birds with the nominate race and admit clinal increase in wing length to the east adumbrating the condition found after the gap in distribution in the Baikal region.

For the Baikal birds there are two names for consideration: *Spizaetus milvoides* Jerdon, 1839: Tiruchirapalli, Madras State, India, and *H. p. harterti* Stegmann, 1935: Transbaikalia. Vaurie (1963) has supported the use of the first and Brown & Amadon (1968) the seond. The use of *harterti* for Baikal region birds is unambiguous, but *milvoides*, although based on a specimen taken in winter quarters, surely came from the Baikal region. This is suggested by the eastern situation of the type-locality (Tiruchirapalli) and the fact that Jerdon (1862), who by then had accepted that it was a synonym of *pennatus*, gives the wing-length as males 420, females 435 mm which falls into the upper range of measurements for Baikal region birds (Table 1c). It would appear that Ali & Ripley (1968) erred in not recognising *milvoides* or its synonym *harterti* and that their measurements, quoted under *milvoides* in Table 1c, are a composite of both races. Presumably eastern segments of nominate *pennatus* as herein defined winter in India as well as *milvoides*. Whether the birds which breed in extreme northern India should be placed in nominate *pennatus* still needs to be determined by those who have access to such material as may be available. However, it does seem clear from the

measurements in Table 1 that only *H. p. pennatus* occurs in southern Africa; in any case, few Baikal region birds are believed to winter in Africa.

In the synonymy of *H. pennatus* Hartert (1914) cited two names used by Andrew Smith for South African birds: *Morphninus albescens* 1830: 115 (with a query) and *Butaetes lessonii* 1834: 287. An examination of Smith (1830, 1834) does not convince me that he was discussing *H. pennatus* under these names. His description of *M. albescens* is of a bird c.80 cm long with a heavily barred tail, whereas *H. pennatus* is just over 50 cm long and has an essentially unbarred tail. *B. lessonii* is described as having the upper shoulder (carpal joint) feathers margined with brown-white and the under shoulders feathers white spotted with black which is not true of *H. pennatus*. It seems to me that Smith's *M. albescens* is based on a juvenal *Spizaetus* (*Stephanoaetus*) *coronatus* L., 1766, as Layard (1867) held; it is the right size, has a well barred tail and the other characters Smith gave. Similarly, it seems that his *B. lessonii* is based on an adult *H. dubius* (Smith), 1830, as he himself on the next page (Smith 1834: 288) and Roberts (1936) held, since this is the only southern African eagle which has the shoulder pattern he describes. The corollary is that Clanwilliam and Outeniqua, long regarded as localities from which *H. pennatus* had been collected (Donelly, 1966), must be excised from the list of acceptably reported localities.

IDENTIFICATION OF SPECIMENS

It appears from the measurements given in Brooke *et al.* (1972) and in Table 1 that while there is overlap in wing-measurements between *H. pennatus* and the larger *Aquila wahlbergi*, specimens may always be separated by the fact that in *H. pennatus* the chord of the hind claw is at least 3 mm larger than the chord of the culmen taken from the front of the cere whereas in *A. wahlbergi* these measurements are virtually identical. Critical study of Transvaal Museum specimens showed that two specimens of *H. pennatus* had been determined as *A. wahlbergi*. The old determinations had been used by Brooke (1966) in building his argument for the migratory behaviour of *A. wahlbergi*. The fact that they are *H. pennatus* strengthens his case, which is now widely accepted, e.g. by Snelling (1971), because it involves the deletion of the only May record he gave and also of an August record and the only one from the Cape Province. The July record in Brooke (1966) is in fact of a fledgling just out of the nest and is discussed in Brooke (1972).

Similarly the chord of the hind claw serves to distinguish *H. pennatus* from the larger *H. spilogaster:* in *H. pennatus* it does not exceed 31 mm whereas it does not fall below 34 mm in *H. spilogaster*. I agree with Dr. A. C. Kemp (*in litt.*) who points out that pale phase *H. pennatus* may be distinguished from immature *H. spilogaster* by the following plumage characters:—

pennatus has a streaked throat whereas *spilogaster* has not;

pennatus has obsolete barring in the rectrices whereas it is well developed in *spilogaster;*

pennatus has dark scapulars contrasting with the paler back whereas they are concolorous in *spilogaster;*

pennatus has plain scapulars, upper wing coverts and tertials whereas they are mottled in *spilogaster*.

I am unable to agree with Porter (1970) that immature pale phase birds are either more gingery below or have paler sides to the face. A study of specimens aged on moult characters (no moult of the primaries, descending, jumbled) shows this to be purely individual variation and that there seem to be no plumage characters for use as ageing criteria.

MOULT

Adults showing active moult of the primaries and rectrices have been taken in November, December and February. The immatures taken on 19 August, 5 September and 17 November show interrupted moult of the primaries, as do adults taken on 10 May, 14 October and 14 February, though the May and February birds are still growing rectrices. Brooke (in prep.) will show that it is normal for southern African eagles to stop moulting their primaries in winter and to resume in October or thereabouts. The April juvenile from Durban has started its postjuvenal moult on the head but has yet to drop a primary.

One adult showed the three centre mode of rectrix moult as expected (Brooke *et al.*, 1972) but others seem to show a jumbled mode. The question needs further study to see what is the normal mode for adult *H. pennatus*. Standard modes for the moult of the primaries hold good, i.e. simple descending in immatures and jumbled in adults.

DISTRIBUTION

Moreau (1972) remarks on how widely but thinly *H. p. pennatus* is distributed in the Ethiopian region during the northern winter. Regrettably, he and Backhurst *et al.* (1973) overlooked the perhaps obscure paper by Donnelly (1966) which suggests that it is by no means rare in southern Africa. It is clear from the ecological characteristics of the localities of the specimens examined that *H. pennatus* occurs throughout southern Africa except, possibly, in evergreen forest and that it does not shun arid regions where trees are few and far between.

Donnelly (1966) had to rely on data provided by other museums and the literature as well as on personal knowledge. This lead to minor weaknesses for which this pioneering study is not to be blamed when dealing with a species which is often misidentified both in museum and the field. Thus reference has already been made to the labelling of two very dark phase *H. pennatus* in the Transvaal Museum collection as *A. wahlbergi*.

If the details of Donelly's (1966) presentation are not always correct, no major conclusions are affected, but the following corrections may be noted. The Selukwe specimen in the National Museum, Bulawayo, has been kept in a cage or aviary and had its wings clipped: its date (October 1952) and provenance must be regarded as uncertain though, no doubt, it was trapped near Selukwe. As already explained the Clanwilliam and Outeniqua records are not acceptable. Donnelly overlooked the record in Sauer & Sauer (1960) of a road casualty at Sukses in South West Africa, the old records from that country in Rudebeck (1963), and the Rhodesian records in Chubb (1909). The Chibisa which he was unable to trace is Mbewe in the Chikwawa District of Malawi (see the Atlas to Reichenow's *Die Vogel Afrikas*). The Durban Museum's copy of Sharpe (1884) has annotations on specimens examined by A. D. Millar. In respect of *H. pennatus* he saw two Durban taken specimens: an unsexed pale phase bird taken on 18 January 1900 and juvenal female on 14 June 1897. These specimens no longer survive.

I am uneasy about the 1946 record from Willow Grange, near Estcourt in Natal (West, Wright & Symons, 1964, and cited via Clancey, 1964, by Donnelly, *op. cit.*). There is a specimen identified as *H. pennatus* from there dated November 1955 in the Natal Museum, Pietermaritzburg, which is an undoubted *A. wahlbergi* on measurements (wing 425, culmen 25, claw 25 mm). The Willow Grange record is only acceptable on the assumption that 1946 is not a *lapsus* for 1955 by West *et al.* (1964).

The specimen from "Rhodesia" in the Transvaal Museum was collected by J. van O. Marais whose collection was bought by that museum. Subsequently, in 1914, Austin Roberts had access to Marais's diary and wrote additional labels which give different particulars, doubtless more accurate, from those on the original labels made when the collection was purchased Most of the specimens are labelled "Sept. 03 Rhodesia". At that time Rhodesia covered all of what is now Zambia as well as Rhodesia in the modern sense. However, the supplementary labels show that certain specimens were obtained in German East Africa, i.e. Tanzania. I believe that despite the original labelling the whole of Marais's collection was obtained in Tanzania since a number of forms he obtained have their southern limits of distribution in that country, e.g. *Crinifer leucogaster*, *C. personata leopoldi*, *Trachyphonus e. erythrocephalus*, *Tricholaema lacrymosum* and *T. diadematum massaicum*. I, therefore, believe that the specimen of *H. pennatus* referred to by Donnelly (1966) was obtained in Tanzania and, since it is a first year bird, probably later than September (see below). This is the second record of a specimen from Tanzania (Backhurst *et al.*, 1973).

According to Dementiev & Gladkov (1966), the majority of *H. pennatus* are present in the U.S.S.R. between April and September. Porter (1970) adds that peak movement across the Mediterranean Sea is in the first two weeks of April and the middle two weeks of September. This means that palaearctic breeding birds could only be present in southern Africa between November and February, allowing a month each way for the migratory journey. Since birds have been collected here outside the midsummer months (Table 1) it appears that some are resident or overwinter. Three of the ten dated records for east Africa are of overwintering birds (Backhurst *et al.*, 1973). It will be noted that the May bird from Asab is an adult (Table 1). By an adult I mean an eagle showing the jumbled mode of moult in the primaries as discussed in Brooke *et al.* (1972). An immature bird is one showing a simple descending mode of moult in the primaries and a juvenile is a bird which has yet to moult a primary even if the postjuvenal moult of the contour feathers has started. A fledgling is a bird able to fly but still under the care of its parents and a nestling is a bird which has yet to fly the first time from its nest.

FOOD RECORDS

Nothing specific on the food of *H. pennatus* is recorded in the southern African literature save domestic chicken eating by the Umtamvuna River bird (Davies 1910). I have seen two birds in company with *M. m. migrans* taking termite alates on the wing at Karoi in January and one with *A. nipalensis*, etc. doing likewise near Bulawayo in November: this is the basis for its inclusion in the list of occasional termitivores in Brooke *et al.* (1972). Incidentally, H. *pennatus* in southern Africa is not normally gregarious except when joining in termite alate feasts and on migration (Donnelly 1966). F. V. Tuer (*pers. comm.*) watched one capture a Laughing Dove *Streptopelia senegalensis* in the Famona suburb of Bulawayo in March. B. G. Donnelly (*in litt.*) saw one capture a Feral Pigeon *Columba livia* at 1400 hrs in the middle of Bulawayo in February. Mrs. P. Lorber (*pers. comm.*) observed one robbing a nest (with nestlings?) of the White-crowned Shrike *Eurocephalus anguitimens* in the Wankie National Park in January. H. A. Fry records on the label of the Krugersdorp specimen that it was "killed while eating a chicken". According to Glutz *et al.* (1971) and Dementiev & Gladkov (1966) it is primarily an eater of birds, to a lesser extent of rodents and other small mammals and to a limited extent of reptiles.

Jerdon (1862) supported by Ali & Ripley (1968) makes the point that *Milvus* spp. are often wrongly accused of taking domestic chickens when the culprit is the very similar looking dark phase *H. pennatus*. This could well apply also to some records of kites taking chickens in Africa.

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Taxonomic notes on the Serpent-eagles of the genus *Spilornis*

by Dean Amadon

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The variability of the Oriental serpent-eagles of the genus *Spilornis* is evident from the fact that about 25 taxa are recognised in the genus, most of them races of a single species, *cheela*. The various forms and their distribution will be set forth in the second edition of volume one of Peters' "Check-List of the Birds of the World", Order Falconiformes, by E. Stresemann, edited by Amadon. Meanwhile one may use the listing in Brown and Amadon (1969: 357–365), but with the emendations made below and, for Philippine forms, by Parkes (1973: 16).

The only place where two species of *Spilornis* are generally believed to occur sympatrically, is in the Andaman Islands. Meise (1939), however, argued that the two forms in question, long called *Spilornis elgini* and *Spilornis cheela davisoni*, are colour phases of one and the same form, which would then become *Spilornis cheela elgini* with *davisoni* as a synonym. Stresemann (1959) dismissed Meise's conclusion rather peremptorily, following examination of material in the British Museum (N.H.). Reconsideration of the Andeman serpent-eagles seemed desirable, in part as an aid in evaluating certain other members of the genus.

A. L. Butler (1899: 685) wrote of his field experience with *Spilornis elgini* in the Andamans: "It frequents clearings in the forest, hill sides with scattered trees, etc., and is less often met with in the mangrove swamps than *Spilornis cheela davisoni,* being much less partial to crabs than that species". Butler thus assumed that two species are present, and, while noting some ecological and spatial separation between them, found that it was not complete. Indeed, two birds of this size could not be fully isolated from one another on such small islands.

In many instances of double "invasions" or double colonization followed by sympatry, the two resulting species differ in size, often markedly so. This is to be expected when two closely related species are thrown into direct competition. Surprisingly the two Andaman Island species of *Spilornis*, if species they are, are not very different in size. Meise said they overlap completely in measurements, while Stresemann mentioned only color and pattern. If "*elgini*" and "*davisoni*" are identical in size one would have to regard this as a strong supporting argument for Meise's contention that they are phases of one and the same form. This is particularly true because great size variation does occur in *Spilornis* elsewhere. Casual inspection of the five specimens of "*elgini*" and two of "*davisoni*" in the American Museum of Natural History suggested that the latter is larger. Measurement of wing lengths seemed to confirm this:

"*elgini*"—3 ♂♂ 369, 373, 375; 2 unsexed 362, 372 mm.
"*davisoni*"—2 ♂♂ 378, 386 mm.

More measurements were desirable, and I am greatly indebted to Dr. David Snow for sending me the wing lengths of specimens in the British Museum, where they have no fewer than 30 "*elgini*" and 16 "*davisoni*". In *Spilornis*, females average somewhat larger than males. As is so often the case, however, some of the available measurements are from un-sexed and others from apparently mis-sexed specimens. As to age, Stresemann (1959) found that two types of immature (but not adult) plumages occur in the genus. In one,

the immature differs from the adult, as in many other hawks, by being paler and streaked rather than barred or spotted ventrally. In the other kind the immature plumage closely resembles that of the adult. In most forms of the genus the immatures are of one type or the other; in a few both types occur as non-intergrading morphs. In *elgini* the immatures resemble the adults, while in *davisoni* they are pale below with a few streaks, quite unlike the old birds.

This distinction, if correct, would make it doubtful that *elgini* and *davisoni* can be morphs of a single form. For present purposes, since it is difficult to tell immature from adult "*elgini*", the measurements of all fully grown birds were included. To compensate for this, the wing lengths of fully grown immatures of *davisoni* were also averaged in with those of adults. There is undoubtedly increased variation in measurements as a result of this and perhaps some distortion. Both samples are heterogeneous, however, and hence marked differences ought to be evident. Also, I note that the two largest of the "*davisoni*" are a "male" with wing 405 and an immature "female" with wing 412 mm.

The combined measurements are:

35 "*elgini*" 348–384, average 364 mm.
18 "*davisoni*" 367–412, average 386 mm.

Only four of the 18 "*davisoni*" measure 375 or less and of these, two are in immature plumage; while only six of the 35 "*elgini*" measure 375 or more, and three of these six are exactly 375 mm. A simple Chi Square test based upon the number of specimens in the two samples measuring 375 mm and more, versus those measuring less than 375 mm, gave an X^2 value of more than 32 and a P value of under 0·005, indicating that the samples differ. Thus, I don't think there can be any doubt that "*davisoni*" is, on average, a larger bird than "*elgini*". In carefully sexed adult specimens there might be no overlap at all, sex for sex.

As for colour and pattern, Stuart-Baker (1928: 96) keyed out *elgini* as follows: "Pale wing bars next to tip of quills much narrower than dark band on either side", as contrasted with *davisoni* (and all the mainland races), in which the opposite is true. Stuart-Baker was not concerned with the numerous forms of *Spilornis* in the East Indies and Philippines, but even when these are all included, *elgini* is separable on the character mentioned from all except a few individuals of the Philippine form *spilonotus* and perhaps of one or two other heavily pigmented forms such as *kinabaluensis* of Borneo. Moreover, the general tone of "*elgini*" is much darker than "*davisoni*"; the latter resembles in that respect some of the mainland forms such as *burmanicus*.

The earlier conclusion that there are two sympatric species of *Spilornis* in the Andamans was apparently correct. Of the two, "*elgini*" is in all respects more divergent from mainland stock, while "*davisoni*" arrived later and, one might almost say from Butler's observations, has hardly more than obtained a toehold in the coastal areas. It is still very similar to mainland races. Hence the two forms should be called, as has usually been done, *Spilornis elgini* and *Spilornis cheela davisoni*.

One publication which did follow Meise by listing only one species of *Spilornis* from the Andamans is Ripley's (1961: 61–62) "Synopsis" of Indian birds in which he cited Meise's paper but not Stresemann's. A few years later Ali and Ripley (1968: 333–334) still listed *davisoni* as a synonym of *elgini*, but included the Andamans in the range of *Spilornis cheela burmanicus!*

This is not a slip, for they say of *elgini* that it occurs less in the mangrove zone than does *burmanicus*. This confusion does bring up the question of whether *davisoni* is separable from the mainland race *burmanicus*. My material is scanty but *davisoni*, if nothing else, is considerably smaller than *burmanicus* and may be assumed to be a valid race.

VARIATION IN BORNEO

Are there any other areas in which two species of *Spilornis* occur sympatrically? Borneo is a possibility. As Stresemann (1959) said, the serpent-eagles of that great island are "Eine harte Nuss . . . zu knacken". Three forms seem to be recognisable; incidentally the same three recognised by Peters (1931: 272–273).

1. *Spilornis cheela richmondi* Swann, type locality southwestern Borneo. This is a small, pale race of southern Borneo. Mayr (1938: 12) wrote: "This race is much smaller than *pallidus* from Sarawak and north Borneo. Our specimens from south Borneo (only fresh feathers compared) are lighter, not darker, than such of *pallidus*. The tail band varies from 32–52 mm in *richmondi* and 39–55 in *pallidus*, averaging in the smaller *richmondi* somewhat smaller (in proportion with the smaller tail) . . . wing lengths, ♂♂ 324, 332, 338; ♀ 360".

2. *Spilornis cheela pallidus* Walden, type locality Sarawak. Northern Borneo except the higher mountains. Belying its name, *pallidus* is darker than *richmondi*, with which it doubtless intergrades. Mayr gave wing lengths of *pallidus* as ♂ 356, 358; ♀ 392. Snow (*in litt.*) measured a dark coloured female from Sandakan with wing 375 mm.

Stresemann mentioned two very small, immature specimens, wing 303, 303 mm, from Sarawak; one of them named *raja* by Sharpe (1893). Theyare probably individual variants, or the small size is the result of immaturity, for it seems most unlikely that "*raja*" is a diminutive, rare species, sympatric with *pallidus*.

3. *Spilornis* (*cheela*) *kinabaluensis* W. L. Sclater, described from Mt. Kinabalu, northern Borneo, but now said to have been recorded also from Mts. Dulit and Murud in neighbouring Sarawak. From darker specimens of *pallidus* the form *kinabaluensis* differs mainly in having the throat and sides of the face black, not gray. It may average a little larger, as do so many altitudinal forms. I have seen only one specimen, but the wing measurements of a few, supplied in part by L. L. Short and D. Snow, are as follows: ♂♂, 372, 372, 380; ♀♀ 390, 400.

Pendlebury and Chasen (1932: 25) wrote of this form as follows: "The peculiar form of Serpent-eagle inhabiting Kinabalu (*Spilornis cheela kinabaluensis*) also [like some species they had just mentioned] occurs sporadically at 8,000 feet although its normal zone is lower—about 3,000–6,000 feet. In the lowlands of Borneo a smaller and paler form of the same species is found, *S. c. pallidus*. At the higher levels of the mountain *kinabaluensis*, of course, entirely replaces *pallidus*, but it is tolerably certain that on occasions the two forms must be found together at about 3,000 feet. From a point of vantage at 5,900 feet we watched a pair of *kinabaluensis* sail past and after circling round continue down into the valley and descend to at least 3,000 feet. Perhaps like some other species that can be separated into high and low level forms on this mountain the two races are now physiologically intolerant of each other even when they meet and mingle, as they certainly appear to do at the peripheries of their ranges". The fact that *kinabaluensis* occurs on a

few scattered peaks, with *pallidus* occupying all the intervening lowlands and foothills, might, I suppose, suggest that it is a species.

We have two specimens of *pallidus* collected for Dr. Tom Harrisson on the Kelabit Plateau, Sarawak at 3,600 and 3,800 feet respectively. They show no intergradation in colour with *kinabaluensis*, nor have intergrades been reported. Nevertheless, material remains scanty and it is difficult to believe that two eagles with such trifling differences do not interbreed. Pendlebury and Chasen, despite the speculations quoted above, continued to regard *kinabaluensis* as a race of *cheela* and so do I, but place the species name in parentheses to indicate some doubt, thus *Spilornis* (*cheela*) *kinabaluensis*.

In addition to *elgini* of the Andaman Islands, which we know to be a species, and *kinabaluensis* of Borneo, which may be, there are a number of other forms of *Spilornis* which are so distinct that they may be species. Among them are several from the Andaman-Nicobar-West Sumatran chain of islands. They vary so much among themselves as to suggest that most of them are independent offshoots of mainland stock. For example *klossi* of Great Nicobar Island is extremely small and pale in colour; but *abbotti* of Simeulue (Simalur) Island is medium sized but very dark and mottled. In other areas one finds *rufipectus* of Celebes and *spilonotus* of the Philippines, both so distinct that they have often been regarded as species.

There would seem to be little doubt that some of these well differentiated taxa are species, especially when we remember that some of them seem to be as distinct as *elgini*. One hesitates, however, to set up as species six or eight forms which most authors in recent years have treated as subspecies of *Spilornis cheela*. To list them as species, moreover, would be to obscure to some extent the fact that in the Andamans, and only there, do we have two sympatric and hence indubitable species. I therefore recommend that the very distinct entities mentioned be continued as subspecies of *cheela*, but, as with *kinabaluensis*, with the use of parentheses around the species name, to indicate possible species status. It is in some cases debatable as to whether a form warrants this distinction, but I think at least the following do:

- *Spilornis* (*cheela*) *minimus*—Central Nicobar Islands;
- *Spilornis* (*cheela*) *klossi*—Great Nicobar Island;
- *Spilornis* (*cheela*) *abbotti*—Simeulue, West Sumatran Islands;
- *Spilornis* (*cheela*) *asturinus* = *salvadorii*—Nias, West Sumatran Islands;
- *Spilornis* (*cheela*) *sipora*—Mentawai group, West Sumatran Islands;
- *Spilornis* (*cheela*) *spilonotus*—Philippine Islands, in part. If a species, *panayensis*, but not *palawanensis*, would be a race of it. The Palawan birds, as so often, are allied to Malayasian forms.
- *Spilornis* (*cheela*) *rufipectus*—Celebes. (If a species, *sulaensis* of the nearby Sula Islands is a race).

In his discussion of one of the forms of *Spilornis* of the West Sumatran Islands, Ripley (1944: 326) wrote: "In its colouration *sipora* shows a close relationship to the black-cheeked strain of *Spilornis* which continues southward with *bido* of Java, *baweanus* of Bawean, and *rufipectus* of Celebes" (*kinabaluensis* of Borneo is another). Perhaps this is the case, but there are other equally distinct forms, even in the West Sumatran Islands themselves, in which the cheeks and throat are not black; among them *abbotti* and *elgini*. There is no doubt that the genus has extended its range, now here, now there, and that *elgini* certainly, and *kinabaluensis* and some of the others listed above, probably, represent an earlier wave of expansion. But the unequal rates of

evolution among the various isolated populations and the fairly recent geological changes in the area render it impossible to work out the history of the genus exactly.

SUMMARY

Evidence is summarised to show that *Spilornis elgini* and *Spilornis cheela davisoni* of the Andaman Islands are sympatric, non-interbreeding species, and not phases of a single form. This is the only instance of sympatry in *Spilornis,* unless further study shows that *kinabaluensis* of the mountains of Borneo is a species overlapping slightly *S. cheela pallidus* of the lowlands. The listing *Spilornis* (*cheela*) *kinabaluensis* is recommended, the parenthesis indicating subspecies status, but with reservations. The same is recommended for half a dozen forms of *Spilornis*, which are so distinct that they may be, or have been called, species, but which are from localities, where, unlike the Andamans, there is no direct evidence whether they would interbreed freely with other forms of the genus.

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Geographical variation in *Lophophorus sclateri*

by G. W. H. Davison

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The three species of Monals, *Lophophorus*, are so similar that it is clear they share a common ancestry. Probably a single population was fragmented during the Pleistocene glaciations into several groups which evolved to specific level. A basis for the plumage differences between species may have been provided by clinal variation in the ancestral species; there are two clues to this. The three species are now distributed in a west to east fashion in the order *Lophophorus impejanus*, *L. sclateri*, *L. lhuysii:* the tail colour of males is

seen to be light cinnamon, dark brown, and black, respectively; while the rump colour of females varies from brown in *L. impejanus*, through dull greyish (western *L. sclateri*) and lightly-barred white (eastern *L. sclateri*) to pure white in *L. lhuysii*.

Published records suggest that four or more distinct populations of *L. sclateri* existed at least until the mid-1950s: (i) around Lo La, Tibet; (ii) Pome and the Po Yigrong, Tibet; (iii) Mishmi Hills and north Burma border; and (iv) Myitkyina, Burma, and adjacent parts of north-western Yunnan. Probably the first and second of these populations are confluent. Their present status is unknown, there having been no sight records for some years, but it is assumed that the species is dangerously rare. Combined data from specimens in the British Museum, American Museum of Natural History and Smithsonian Institution indicate that the Myitkyina/Yunnan population is worthy of subspecific recognition. By contrast, typical specimens from the Mishmi Hills, Arunachal Pradesh (formerly N.E.F.A.), agree in plumage with more westerly populations. Variation in the plumage of male *L. sclateri* was first noted by Ali & Ripley (1948), who suggested that western birds were less streaked on the rump than those from the east. Specimens do give an indication of this but it is a character difficult to define quantitatively.

Lophophorus sclateri orientalis, subsp. nov.

Description: In the male the terminal white tail band, measured along the shaft of the central tail feathers, is much narrower than that of western birds, while the culmen measured from the feathers averages a little shorter. The dark shaft-streaks on the back extend less far down the rump but the individual streaks are wider, averaging 2 mm wide as against 1·3 mm for western birds. The female is paler than the type, with an off-white rump barred with dark grey. The dark chocolate colour of the secondaries is much invaded by rufous-buff; on the neck the markings are larger and paler and on the breast the barring is wider and more distinct, less blurred by speckling and irregularities. The female's bill also is shorter.

Type: ♂ adult, collected in 1925 by M. West in Myitkyina District, north-east Burma. In British Museum (Natural History), registered number 1928.7.14.4. Wing 308, culmen 31·5, tail band 17 mm.

Distribution: A restricted area in the Chimili Pass and Myitkyina District, north-east Burma, from the upper Irrawady eastwards into north-west Yunnan around Tengyueh and the Schweli-Salween watershed.

Measurements:

		Tail band (mm)	*Culmen (mm)*
L. s. sclateri	6♂♂	20 – 28 (25·5)	32·5 – 35·5 (34·5)
	3♀♀	—	32·5 – 35·0 (34·2)
L. s. orientalis	9♂♂	10·5 – 20 (16·2)	31 – 34 (32·3)
	3♀♀	—	28·5 – 30·5 (29·1)

Material: Eight males and four females of the species in the British Museum, of which four males and one female are ascribed to *L. s. orientalis*. Data on seven males and two females in the American Museum of Natural History and Smithsonian Institution.

Acknowledgements: I am grateful to John Farrand, Jr. and Michel Desfayes for supplying data on skins in American collections, and to S. Dillon Ripley for his comments.

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On the biology of *Monticola imerinus* (Hartlaub)

by T. Farkas

Received on 28th September 1974

BREEDING RANGE, HABITAT, GENERAL HABITS

This paper is mainly based on field observations made between the 6 and 18 January 1970. They are supplemented by experience with a male and a female bird, both hand reared and kept for two years in captivity, and by investigation of specimens in the American and British Museum of Natural History collections.

Delacour (1932) and Rand (1936) give the breeding range of this endemic Rock Thrush as strictly confined to the south-western sub-desert strip of Madagascar. For this reason, as the Rev. O. Appert has pointed it out (pers. comm.), its specific name (cf. Hartlaub, 1860, p. 97) is misleading because this bird does not occur in any area inhabited by the Imerina tribe. In fact, *imerinus* suddenly becomes common just south of the Onylahy River estuary (itself c. 30 km S. of Tulear), and is abundant in all suitable habitats from there down the coast as far as Cape St. Marie. Thence towards Fort Dauphin the limits of its range can as yet only be guessed. Inland its range seems limited generally by the availability of a certain type of habitat, indicated in the following paragraph.

In my experience, *imerinus* occurs exclusively where there are loosely connected groups of low to medium high (up to 4 m) shrubs interspersed with a few *Euphorbia stenoclada*. This semi-open type of cover is found mostly on the sandy soils of dry grassland or dune, where the ground is often bare. Some herbaceous vegetation occurs in the open spaces between the shrubs, but may be heavily grazed down by cattle and sheep, particularly in the vicinity of fishing villages. I have never found *imerinus* in forest or in any other kind of dense and tall vegetation, a fact which perhaps explains its very local occurrence north of Tulear as far as its probable northern limit around Morombe, where *Euphorbia stenoclada* becomes dominant, forming a dense stand with thick undergrowth.

The habitat, and also feeding and perching habits of *imerinus* are reminiscent of those of *M. brevipes* in the dry south-western region of theAfrican continent; when undisturbed, the species is mostly quite confident, perching on a bush-top, quite often a solitary one in an open patch, although the hedges round a fruit- or vegetable-plot and bushes on the seashore are also preferred vantage points. Only when disturbed does it take refuge in thicker bush or retire among the branches of an *Euphorbia*, the spines of which give excellent protection against any enemy. On the other hand, when moving around on the ground among tide-line debris, *imerinus* shows a surprising similarity to the Bluethroat *Luscinia svecica cyanecula*. In the heat of the day, it retreats into the bush, perching on low branches just above the ground. It still emerges to catch its prey in the nearest open space, returning with it quickly to the shelter. With afternoon, when the heat has somewhat decreased, it appears again on its regular perches in the open. There are no rocks in the habitat, but when feeding the bird sometimes uses small termite-heaps or pieces of limestone just poking out of the soil as look-out posts.

BREEDING

The rainy season in this driest and hottest corner of Madagascar lasts from December to February only. Juvenile specimens in the museum collections, taken when barely out of nest, are dated February and March.

Assuming that breeding must therefore be connected with the onset of the rains, I made my first visit to the sub-desert in January and duly found nesting in progress. In the coastal scrub between Soalara and Anakao (about 25 km south of Tulear), 12 nests were discovered in a few days, all of them within a kilometre of my camp on the dunes. Five contained eggs in various stages of incubation, in one there were two newly-hatched young and one egg, which was hatched the next morning, four were just completed but without eggs, and from two the young had recently flown. All

Fig. 1. *Euphorbia stenoclada* nest-site near tide-line.

the nests, except one, which had been built among the terminal twigs beneath the umbrella of a bush, were in *E. stenoclada*, in two cases the euphorbia being a solitary tree on open ground and in one case just above the tide-line (Fig. 1). The nest is well-constructed and strong, but in place of the very thick base typical of *M. sharpei* (Farkas 1973), is suspended among

branches 1·5 to 3 m up, although always supported below by a twig. It is made of lichens, some moss and other fibrous material, strengthened with feathers (in several cases those of domestic fowl), bits of snake skin and twiglets. In one nest a few pieces of linen and cotton thread were also seen. The cup is about 3 cm deep and 8 cm wide at the rim, and is well lined with fine rootlets and some feathers. Both in its construction and site, the nest is therefore a remarkable adaptation by a Rock Thrush to the exceptional conditions of its sub-desert habitat.

The eggs are plain turquoise; a clutch of 3 (the normal number) measured: 22·5 × 13, 23 × 13·5 and 23 × 14 mm. Only females were seen incubating and sometimes being fed by the males. The average size of defended territory seems to be not more than a hectare and centred on the nest. The males, however, often trespassed some distance outside their own territories but crossed those of other pairs swiftly and silently without evoking any reaction. A male marks his territory by a simple but conspicuous display flight, accompanied by song. He flies up steeply from a perch with closed tail, slightly fluffed out plumage and slowly-beating wings to about 20–30 m, circles for a second or two and descends in a shallow dive to another perch. This display was sometimes seen even at noontime, when the heat seemed almost unbearable, and is very like the similarly simple display flight of *M. solitarius* or *M. bensoni*, rather than the more elaborate one of *M. saxatilis* or *M. explorator*.

DEVELOPMENT OF YOUNG

The newly hatched *imerinus* has a vivid yellow skin and very light grey down, legs and bill ivory and gape bright yellow. It takes some 50 days for the bill to turn dark brown; the legs darken somewhat sooner, only the soles remaining ivory in the female and turning pale yellow in the male. During the first month the gape of the female becomes pale white whilst that of the male remains yellow for life. Fledged young differ not only in colour but also in their slighter build and more oblong head from the young of *M. sharpei*. On leaving the nest a hand-reared male weighed 26 and the female 24·5 g.

The eyelids started to open on the 10th day and by the 14th begging has become entirely visually directed. Begging behaviour is identical with that of *M. sharpei,* except for wing-fluttering, which is "symmetrical" up to the 17th day but then begins to be "asymmetrical" and is completely so within a week: this as I have learned from E. N. Panov (Moscow Univ.; pers. comm.) also happens with the young of *M. solitarius longirostris*. Attempted preening was first observed on the 10th and the first head-scratching (indirect) on the 15th day. The hand-reared young had left the nest on the 18th day but returned to it to rest for several days; it was noticeable that the first time they were on the ground, they immediately adopted the adult mode of hopping rather than walking. They first attempted to pick up food from the ground on the 20th day, but begging on a declining scale continued till the 60th day.

The juvenile (Fig. 2) has pale whitish apical tips to the dorsal feathers and pale grey almost white underparts due to the feathers being more broadly tipped, although the tips are thinly edged with darker colour, which gives a fine scaly appearance. By the time the young leave the nest, the sexes can already be distinguished, males having slate-grey rectrices, pale rufous upper tail-coverts and somewhat darker throat and breast (becoming slate grey in the adult). About the 30th day when the axillaries and under wing-coverts

begin to grow, those of the male are rufous and of the female pale whitish. Finally, the proximal parts of the male's light-edged slate grey rectrices always have a few, irregular-shaped pale rufous spots concealed by the tail-coverts. On the other hand the female's rectrices are pale sandy coloured, with the two median feathers darker, and although the upper tail-coverts can have a few pale rufous tips, in my experience this is an irregular feature.

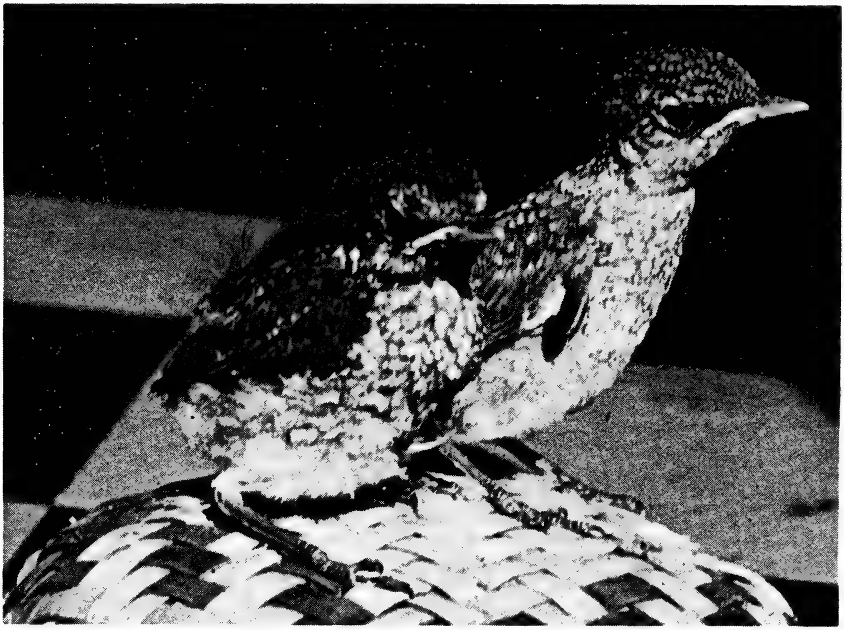

Fig. 2. Juvenile ♂ and ♀ *Monticola imerinus.*

In both sexes the rectrices of the young are pointed and somewhat narrower than the adult's, a quite unusual feature in *Monticola* but found, for example, in *Luscinia svecica cyanecula* (Mayaud, 1938). This similarity and others mentioned later could have been attributed to convergence but for the analysis undertaken by Panov and Bulatova (1972), who found "a great similarity of karyotypes . . . in the genera *Oenanthe, Saxicola, Monticola* and an approximation to them in *Cyanosylvia svecica*".

Development of the juvenile dress was completed about the 40th day in the hand-reared birds and on the 55th day they indulged in a thorough bath, an activity seldom observed in later life. The first moult started after 90 days, at first only slowly on the shoulders and flanks, and was completed by about the 150th day. Except for the pointed tail-feathers, sub-adult females are almost indistinguishable from the adult; in males, however, immaturity is indicated not only by the previously mentioned pale rufous spots on the pointed rectrices, but also by the fact that in the moult although the upper tail-coverts are normally replaced by pale slate blue ones, some of them can retain pale rufous apical edges. However, this has been seen not only in the subadult, but even in a three-year old male.

Adults moult once a year in March–April; there is practically no difference between the post-breeding and nuptial plumage, except that the very narrow pale apical edges to the feathers of breast and mantle wear off.

Begging in very young nestlings is at first accompanied by a thin piping, which develops by the 16th day into the definitive begging call—"sreee". A shortened but equally thin "sett" call was heard after the young left the nest, repeated endlessly and apparently serving to maintain contact, until the family breaks up with the awakening of aggression between the young. A higher pitched "tock" note, often briefly but rapidly repeated, denotes excitement and warning, and was first heard on the 34th day, about the same time as the call-note, which is again a thin quiet one, "veed". A soft rattling "kk-kjerr-ekk-ekk" scolding is uttered (often as part of the song) by rival males or annoyed females.

The subsong (almost inaudible to human ears) was first produced on the 19th day by the hand-reared male, but not till the 38th by the female, by which time the male was already well practised; it remained of a low volume in both sexes. A similarly low volume characterises the "rehearsed" song: this started to develop after the 80th day, when the first motif-like sounds and some gutteral notes (cf. *M. sharpei*) appeared in the subsong of the male. On the 90th day the first primitive melody was heard from the male and duly developed into primary song, but it was not until, seven months later, about the 300th day, that the first complete melodies were produced. The song in *M. imerinus* is functionally similar to that of *M. sharpei*, that is for territory, courtship and signal purposes. All these types of song, though stronger than the "rehearsal" version, are decidedly weak for a Rock Thrush. In fact, they sound very strange for this genus, especially the territory song which is a hurried mixture of rattling, chirping and squeaking. As such it would be better suited to a Reed Warbler or Bluethroat! The signal song (often heard from peacefully perching males) and the courtship song have somewhat more resemblance to those of other Rock Thrushes. Finally, at least the rehearsed and territory songs incorporate imitations of other species, although not easily detectable because of the low volume, for example the imitation of the call of *Oenanthe monticola*, which I first heard from my hand-reared male on the 280th day.

Probably because the slate grey of the rectrices has very little impact as a signal, the ♂ *imerinus* never spreads its tail in intention movements and displays. Twitching of folded wings and tail, on the other hand, are similar to those observed in *M. sharpei*, but head-tossing is modified and nearer to that of *M. explorator*. In courtship the neck is stretched out and the head is either swung slowly laterally or turned slightly around its axis. A greeting ceremony was seen in the hand-reared birds as early as the 40th day: with all the feathers depressed, the male stretched his neck towards the female and sang with slightly opened bill and slowly swinging head. The first threatening posture (when another bird landed on the top of the cage) was recorded on the 132nd day for the male and two days later for the female; with feathers depressed on head and breast, but slightly bristled on mantle and abdomen, they took up a motionless, somewhat crouching position and stared at their opponents. Finally, about the 200th day, the self-advertising posture was first shown: with all feathers depressed and upright stance the male slightly shivered his wings and twitched his tail as with half-open beak he uttered the courtship song.

ACKNOWLEDGEMENTS

This fourth study of Madagascar thrushes was covered by a grant from the Frank M. Chapman Memorial Fund of the American Museum of Natural History. During my field work, I enjoyed the hospitality of the Marine

Biological Station of the Tananarive University at Tulear. I have had valuable support from Mr. C. W. Benson and from Dr. P. Griveaud of O.R.S.T.O.M., Tananarive, who went out of his way in helping me overcome the difficult transport problems involved in an expedition to south-western Madagascar. To all of them I herewith extend my grateful thanks.

SUMMARY

The adaptations of the Madagascar Rock Thrush *Monticola imerinus* to conditions in its habitat, and its dependence on *Euphorbia stenoclada*, are described. The breeding behaviour and the development of the young, partly based on observation of two hand-reared birds, are shown to be in many respects intermediate between those of the rock- and of the wood-inhabiting members of the genus and also, in some ways, suggest an affinity to *Luscinia svecica cyanecula*.

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Bird weights from Angola

by W. R. J. Dean

Received 27th June 1974

The following weights are of birds collected in Angola mainly north of the Cuanza River. Also included are several species which occur in the drier southern region of Angola and which are either endemic or little known in terms of weight data.

Birds were collected at the following localities and dates:

1. Guilherme Capelo area, Cabinda. *c.* 5°13'S., 12°10'E., August.
2. Quicama, Luanda. *c.* 9°20'S., 13°21'E., August.
3. Salazar, Cuanza Norte. *c.* 9°18'S., 14°54'E., August.
4. Cangandala area, Malanje. *c.* 9°44'S., 16°48'E., August.
5. Quibala area, Cuanza Sul. *c.* 10°48'S., 14°59'E., July.
6. Negola, Huila. *c.* 14°20'S., 14°28'E., September.
7. Sa da Bandeira, Huila. *c.* 14°53'S., 13°30'E., September, October.
8. Humbe, Huila. *c.* 16°40'S., 14°55'E., September.
9. Rocadas, Cunene. *c.* 16°43'S., 15°01'E., September.

In the species list which follows I have given the species, a number denoting locality and date according to the above list, sex and weight of the bird in grammes, taken to the nearest tenth of a gramme for birds below 20 g. The status of the bird is adult and non-breeding unless otherwise stated (imm. for immature and br. for breeding).

The nomenclature and order follows Traylor (1963).

Podica senegalensis albipectus. 1. ♂ 627, ♀ 338
Poicephalus meyeri. 6. ♂ (imm.) 124
Poicephalus ruppelli. 7. ♀ 120
Cosmetornis vexillarius. 4. ♂ (br.) 76

Colius castonotus. 2. (not sexed) 50
Ceryle maxima gigantea. 1. ♀ 370
Ceryle rudis. 1. ♂♂'s 70, 78, 80, 86, 86
Halcyon leucocephala. 4. ♂ 46; ♀ (br.) 57
Halcyon senegalensis. 1. ♂ 49
Halcyon chelicuti. 2. ♂ 41; 7. ♀ 43
Phoeniculus purpureus. 6. ♂ (imm.) 67
Tockus fasciatus. 1. ♂♂ 280, 286; ♀♀ 243, 248; ♀ (imm.) 233; 3. ♂ 316
Tockus bradfieldi. 8. ♀♀ 204, 198
Tockus pallidirostris. 6. ♂ 266
Bycanistes sharpii. 1. ♀ 500; 3. ♂ 710.
Bucorvus leadbeateri. 9. ♀ 3100
Pogoniulus leucolaima. 3. ♀ 14·6
Prodotiscus insignis. 3. ♂ (imm.) 10
Thripias xantholophus. 3. ♀ 55
Petrochelidon rufigula. 5 (not sexed) 15·9
Coracina pectoralis. 6. ♂ 49
Oriolus auratus. 6. ♀ 71
Salpornis spilonota. 6. ♂ (br.) 16
Turdoides jardinei. 6. ♂ 70
Turdoides leucopygius. 6. ♂ (imm.) 71
Andropadus virens. 3. ♂ 25; ♀ 23
Chlorocichla falkensteini. 3. (not sexed) 34, 37
Cossypha (*Xenocopsychus*) *ansorgei*. 7. ♂ (br.) 36
Prinia bairdii. 3. ♀ 14·1
Cisticola bulliens. 2. ♂ 17·5; ♀ 14·3
Cisticola brachyptera. 1. ♂ 8·6; ♀ 8·4
Camaroptera superciliaris. 3. ♂ (inm.) 11·1
Apalis flavida. 2. (not sexed) 8·8
Eremomela badiceps. 3. (not sexed) 11·2
Sylvietta virens. 1. ♂ 7·7
Sylvietta rufescens ansorgei. 2. (not sexed) 11·3
Pedilorhynchus comitatus. 1. ♂ 20; 3. ♀ 14·3
Stizorhina fraseri. 3. ♂ 33
Hyliota flavigaster. 7. (not sexed) 11·7
Bias musicus. 3. ♀ 30
Batis minulla. 2. ♂ 10·4; ♀ 10
Dyaphorophyia castanea. 3. ♂ 13; ♀ 14·3
Platysteira albifrons. 2. ♂ 11·7
Platysteira peltata. 3. ♀ 16·1
Elminia longicauda. 3. ♀ 9
Prionops plumata. 6. ♂ 33
Prionops netzii. 6. ♂ (imm.) 49
Telophorus bocagei. 3. ♂ 28
Lanius souzae. 6. ♀ (br.) 33 (see Dean 1974)
Neocichla gutturalis. 6. ♂♂ 64, 72; ♀ 64
Nectarinia seimundi. 3. (not sexed) 7·1
Nectarinia olivacea. 3. ♂ 11; ♀ 10
Nectarinia verticalis. 3. ♂ 14·5
Nectarinia fuliginosa. 1. ♂ (br.) 11·6
Nectarinia chloropygia. 3. ♂ 7·1; ♂ (imm.) 6·4
Nectarinia superba. 3. ♂ 18; ♀ 15·4
Plocepasser rufoscapulatus. 6. ♂♂ 43, 48

Ploceus nigerrimus. 3. ♂ 41
Pholidornis rushiae. 3. ♀ 6
Spermophaga ruficapilla. 3. ♂ 25; ♀ 23
Nigrita canicapilla. 3. ♂ 19; ♀♀ 19, 18·3
Nigrita bicolor. 3. (not sexed) 11·2
Nigrita fusconota. 3. ♀ 9·1
Estrilda melpoda. 3. ♂ 8·9

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High density breeding of the Red-necked falcon *Falco chicquera* in Zambia

by J. F. R. Colebrook-Robjent & T. O. Osborne

Received 29th May 1974

In assessing what is known of African birds of prey, Brown (1970) classifies the Red-necked Falcon as "little known". What follows is a summary of our breeding notes for 1973 in Zambia. The sub-species occurring in Zambia and north of the Zambezi is *Falco chicquera ruficollis*. A brief review of the *Falco* spp. of Zambia is given by Benson *et al.* (1971); *F. chicquera* is one of the seven species proved to breed in Zambia, but only one, the Lanner *F. biarmicus*, is at all generally distributed. Only four breeding records are quoted for *chicquera,* one each for May, July, August and September. The fullest account of the habits of the species that we can trace is by Ali & Ripley (1968) for the nominate race in India.

BREEDING HABITAT

We have found two rather different breeding habitats, neither exactly corresponding to some recorded for other races, e.g. for *horsbrughi*—along dry river beds with large trees—or for nominate *chicquera*—densely foliaged branches of a mango or peepul tree . . ., often close to a village (Ali & Ripley 1968).

Habitat A: Dry thorn tree savannah with isolated palms *Borassus aegyptium* not associated with water (e.g. near Choma, Mazabuka and Lochinvar, where palms are used exclusively for nest sites and pairs are widely scattered and local).

At the Mazabuka site there were four eggs on 18 August and near Choma the same number on 26 August. At another site near Choma, 6 km from the previous nest, an immature ♀ laid her first egg on 4 September and only one more. All three nests were in the bases of palm fronds at heights of 11, 11·5 and 14·5 m, respectively. At Lochinvar two nests were found 16·5 and 15·5 m up in palms at woodland edge or among scrubby trees, about 12·5 km apart. One had four eggs on 24 August, the other a full clutch of three on 7 September.

Habitat B: Near water on the Kafue Flats, north of Lochinvar; flood plain, separated from the woodland on higher ground by a belt of Termitaria grassland. Stick nests of the Pied Crow *Corvus albus*, built in *Acacia albida* or *Borassus* palms are invariably taken over; between 30 August and 5 October we located eight such nests in a remarkably confined area. Details as follows:

TABLE 1

Falco chicquera nests, Nampongwe—Kafue confluence

No.	Date	Site	Egg measurements (in mm)	Notes
1	30 Aug.	acacia	41·7 × 31·5 41·3 × 31·4 41·0 × 32·7 40·8 × 32·1	10 m up in old crow's nest. Eggs collected (fresh). The 3rd egg of the replacement c/3 was laid on 19 Sept. in new crow's nest in same tree.
2	,,	acacia	41·0 × 32·6 40·9 × 33·2 40·5 × 32·2 40·1 × 32·6	9·5 m up in old crow's nest.
3	,,	acacia	45·1 × 31·6 44·8 × 32·5 44·4 × 31·9 42·6 × 32·8	10 m up in old crow's nest. Eggs collected (hard set). Replacement c/3 laid by 24 Sept. in same nest. Nest tree (preferred to palms in the vicinity) was in a permanent fishing village (see Figs. 1 and 2).
4	24 Sept.	palm	?	11 m up; not inspected.
5	,,	palm	42·7 × 31·0 42·0 × 31·5 41·8 × 31·6 40·7 × 31·9	4·8 m up in old crow's nest attached to underside of occupied nest of *Haliaaetus vocifer*.
6	,,	acacia	41·6 × 31·0 40·9 × 30·9 40·6 × 31·0	4·5 m up in old crow's nest. Eggs obviously well incubated.
7	,,	palm	?	8 m up; not inspected.
8	5 Oct.	acacia		4 young, c. 9–10 days old.

As indicated in the sketch-map (Fig. 3) the eight nests discovered were on or near the Kafue and in fairly close proximity, distances between adjacent sites ranging from 1·3 to 3·2 km and an average of 2·05 km. The flood plain is here *c.* 979 m a.s.l., the few trees usually growing on slightly higher ground, usually near the river bank or oxbow pools. The average size of the home ranges centred on each nest works out at 5·5 km^2.

DISCUSSION

Like other falcons this species does not build its own nest, in the strict sense, but lays its eggs either in the bases of palm fronds or in the nests of other species (in our experience always the crow *C. albus*): either old (usually) or new nests are utilised, in the latter case the crows being dispossessed just before egg-laying. When palms are selected the eggs are laid inside the broadened base of a living frond next to the heart of the palm, on bents or palm fibres roughly scraped together. Ali & Ripley imply that in India this species often builds its own nest, but as Brown & Amadon (1968) remark this would be so unusual as to need confirmation.

Eggs. Normally four, sometimes three and once two only (laid by an immature bird). They are oval to rather long oval in shape and variable in colour: shell whitish, usually obscured by pinky or yellowish-brown, unglossed, texture rather chalky, variously smeared, spotted or blotched with rather dull brick reddish-brown. Their general appearance is mottled or stippled, but as incubation progresses they bleach and fade rapidly (Brown & Amadon 1968). Nearly all eggs are more or less stained by the excreta

which commonly fouls more than half the nest. Occasionally an egg is markedly dissimilar to the rest of the clutch; one such was pale pinkish, only very lightly stippled and dotted purplish-pink and noticeably lighter than the other, more typical eggs. Wolfe (1938) describing his eggs of *F. c. chicquera* makes the point that they do not resemble those of the Merlin *Falco columbarius*, a supposedly close relative. The latter, as well summarised

Figures 1 and 2. *Falco chicquera* nest site No. 3, Kafue River, Zambia and the clutch of four eggs in an ex-Pied Crow's *Corvus albus* nest at site No. 2.

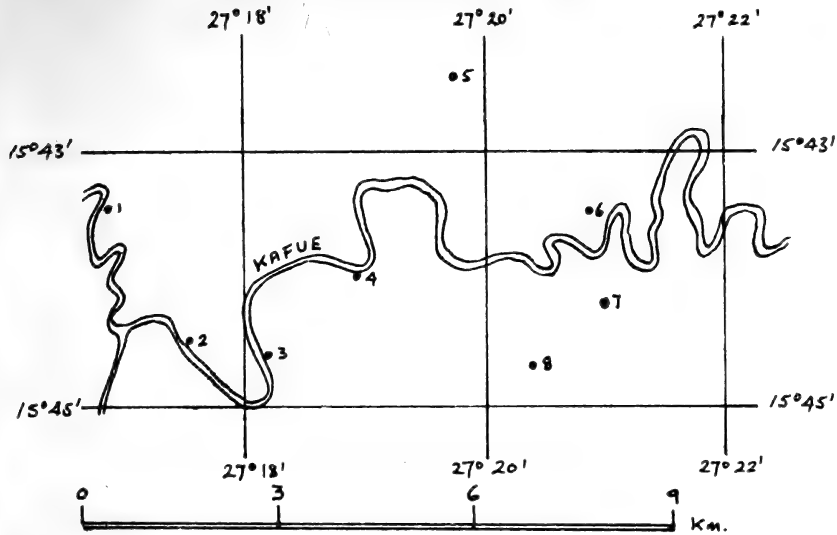

Figure 3. Location of *Falco chicquera* nest-sites in the Kafue River floodplain, in the vicinity and mainly below the junction of the Nampongwe tributary.

by Jourdain (in Witherby *et al.* 1943), are generally darker, smoother and (usually) rounder. In our view the eggs of the Red-necked Falcon more closely resemble those of the hobby group, differing only from the "typical" hobbies' such as *cuvieri, subbuteo* or the Australian *longipennis* in their greater variation and normally more chalky appearance. All three races of *chicquera* commonly lay four eggs, whereas hobbies of about the same size usually lay only three. Over 80 years ago Hume, quoting Anderson (see Oates, E. W. ed., 1890), made the same point, comparing the eggs of the Indian race with those of *F. subbuteo.*

Ali & Ripley (loc. cit.) give the average size of 120 eggs of *F. c. chiquera* as 42·4 × 31·1 mm (from Stuart Baker). McLachlan & Liversidge (1970) give the average of four eggs of *F. c. horsbrughi* as 43·4 × 33·3 mm. Brown & Amadon (1968) combine both African races and quote the average of 10 eggs as 42·0 × 32·7 mm. Both the two last-mentioned works overlooked a short note by Malherbe (1963), in which four eggs of *horsbrughi* from the Transvaal are described, measuring 44·4 × 31·3; 43·1 × 31·8; 42·5 × 31·8 and 42·3 × 31·3 mm. Incidentally, these had been laid in July also in an old Pied crow's nest and in a thorn tree.

Our average of 45 eggs of *ruficollis* is 42·0 × 32·0, max. 45·1 × 31·6 and 42·5 × 33·4 and min. 39·4 × 31·2 and 39·5 × 30·9 mm. Like other falcons the red-necked regularly re-lays if the original clutch is lost, but only three eggs at the second attempt. In the one case that was accurately determined the replacement clutch was completed in 19 days and hatched 33 days later. Malherbe gives an estimated incubation period of 32–33 days; maximum 34 days. One of us (T.O.O.) accurately recorded the fledging period at one nest, which was 37 days.

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IN BRIEF

(a) Little Gull *Larus minutus* south of the Sahara

In the note on a record of *Larus minutus* in Angola (*Bull. B.O.C.* 94: 57), it is surmised that this is the first record of the species south of the Canary Islands. However, in the Appendix of R. E. Moreau's *The Palaearctic-African Bird Migration Systems* (1972), compiled by the late K. D. Smith, records from Sierra Leone and from Lagos, Nigeria, are listed (p. 292).

30 August 1974 G. J. Oreel

(b) Finfoot *Podica senegalensis* in Ethiopia

In *A checklist of the birds of Ethiopia* (1971), Urban and Brown were only able to include this species on the basis of three recent sight records (p. 42). It may therefore be of interest that excellent views of a finfoot were obtained on 27 March 1974, at the Blue Nile bridge, Bahar Dar (Lake Tana), for about 15–20 minutes. It was first noticed near rushes along the bank, swam out to feed round some rocks in the middle of the river, climbed out to preen for about 7 minutes, and then continued feeding until observations had to be suspended.

16 September 1974 Mrs. S. Sassoon

(c) Buff-breasted sandpiper *Tryngites subruficollis* in Africa

Field (1974, *Bull. B.O.C.* 94: 77) states that his sighting of the Nearctic Buff-breasted Sandpiper *Tryngites subruficollis* (Vieillot) in Sierra Leone on 11 and 15 November 1973 is the first record for Africa; this is incorrect although it would appear to be the first for the Ethiopian region. Hopson & Hopson (1974), recording an example of this species at Lake Rudolf, Kenya, on 8 December 1973, draw attention to two previous African records from Egypt and Tunisia given by Etchécopar & Hüe (1964); thus Field's record becomes the third for Africa.

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Etchécopar, R. D. & Hue, F. 1964. Les oiseaux du nord de l'Afrique. Boubée, Paris.
Hopson, A. J. & J. 1974. A Buff-breasted Sandpiper *Tryngites subruficollis* at Kerio Bay, Lake Rudolf. *EANHS Bull.* 1974: 17–18.

G. C. Backhurst

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PREFACE

Volume 95 was maintained at 176 pages, although before the end of the year it became clear that, due to escalating costs, some at least temporary reduction in size would be necessary in the immediate future. However, since a principal aim of the *Bulletin* is to provide for the prompt publication of short or preliminary accounts of new discoveries and of reassessments or revision of published information over the whole ornithological spectrum rather than as at one time of largely taxonomic interest, it should continue to be possible, as in 1975, to accommodate a good range of papers from authors in all parts of the world. Waiting time from the receipt of a contribution to publication in Vol. 95 seldom exceeded six months and was often much less.

As before, the Editor, who completed a brief term of office at the end of the year, is greatly indebted to his predecessor Mr. C. W. Benson and to Mrs. M. Hawksley for the meticulous preparation of prefatory matter and the index for this volume. In addition, Mr. Benson, together with Dr. L. H. Brown, Mr. S. Cramp, the late Captain C. R. S. Pitman, Dr. D. W. Snow and Mr. C. M. N. White very kindly advised on various points arising from material offered for publication. Finally, Mr. K. E. Wiltsher and his staff, in the Caxton and Holmesdale Press, remained admirably considerate and imperturbable in maintaining efficient and punctual publication.

HUGH F. I. ELLIOTT

LIST OF MEMBERS: AMENDMENTS UP TO 31st DECEMBER, 1975

(Compiled by the Hon. Treasurer)

New Members

BRAMLEY, A. D., 30 Hinckley Road, Stoney Stanton, Leicester LE9 6LJ.

BUNTING, G. G., 20 Stapleford Road, Reading, Berkshire RG3 3ED.

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COLSTON, P. R., British Museum (Natural History), Tring, Hertfordshire.

COWLES, G. S., Fetherstones, 23 Kirkdale Road, Harpenden, Hertfordshire AL5 2PT.

DANEEL, A. B., Chamber of Mines, P.O. Box 809, Johannesberg 2000, South Africa.

DAWSON, L. R., Easter Ellister, Port Charlotte, Islay, Argyll, Scotland.

ERVIN, Dr. S., Department of Biology, California State University, Fresno, California, U.S.A.

FROST, R. A., 66 St. Lawrence Road, North Wingfield, Chesterfield, Derbyshire S42 5LL.

GILSTON, H., Chemin des Mouettes 16, 1007 Lausanne, Switzerland.

INGELS, Dr. J., Galgenberglaan 9, B-9120 Destelbergen, Belgium.

LEIGHTON, Sir M. B. J., Loton Park, Salop.

MAHER, Ali A., Chairman, Plant Protection Department, Faculty of Agriculture, Assuit University, Egypt.

MOUNTFORD, A. R., 1 Probert Road, Brixton, London SW2 1BN.

NIELSEN, B. P., Hogaarden Lejl. 338, Boydes Alle 28, DK-2300 Copenhagen S., Denmark.

SMITH, A. P., Brunei Shell Petroleum Co. Ltd., Seria, State of Brunei, Borneo.

URBAN, Dr. E. K., Department of Zoology, 632 Science-Engineering Building, Fayetteville, Arkansas 72701, U.S.A.

WARHAM, Dr. J., Department of Zoology, University of Canterbury, Christchurch, New Zealand.

WELLS, Dr. D. R., School of Biological Sciences, University of Malaya, lembaH Pantai, Kuala Lumpur, Malaya.

Resignations

GARCIA, E. F. J.

HUDSON, R. W.

LATHBURY, Gen. Sir Gerald, K.C.B., D.S.O., M.B.E.

McCHESNEY, Col. D. S., U.S.A.F.(RETIRED)

PORTER, Dr. D. I., M.R.C.P.

SCOTT, Sir Peter, D.S.O., D.S.C., M.A.

SHACKLETON, K. H.

UPTON, Mrs. P.

Deaths

The Committee much regrets to record the deaths of the following members:—

Lord HURCOMB, G.C.B., K.B.E.

Captain C. R. S. PITMAN, C.B.E., D.S.O., M.C. (Vice-Chairman 1956–1959, Chairman 1959–1962).

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Dr. J. F. Monk	1965–1968
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J. H. Elgood	1971–1974
P. Hogg	1974–

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D. Seth-Smith	1915–1920
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N. B. Kinnear	1925–1930
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Capt. C. H. B. Grant	1935–1940
Dr. G. Carmichael Low	1940–1945
Lt.-Col. W. P. C. Tenison	1945–1947
Capt. C. H. B. Grant	1947–1952
Dr. J. G. Harrison	1952–1961
J. J. Yealland	1962–1969
C. W. Benson	1969–1974
Sir Hugh Elliott	1974–1975

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Miss E. P. Leach	1942–1949	M. St. J. Sugg	1974–

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by C. W. Benson with the assistance of Mrs. M. Hawksley)

All generic and specific names (of birds only) are indexed. Subspecific names are included only if new and are also indexed in bold print under the generic and the specific names.

Corrigenda

p. 26, line 16: '*Machaeropterus*', not '*Machseropterus*'
p. 27, line 40: '*leucotis*', not '*lencotis*'
p. 39, line 42: 'F. Haverschmidt', not 'G. Haverschmidt'
p. 85, line 1: '*Cyanocorax*', not '*Cyanocrocorax*'
p. 85, line 41: '*Cacicus cela*', not '*Cacius cela*'
p. 113, line 8: '*orinomus*', not '*erinomus*'
p. 113, line 37: '*cacozelus*', not '*cacolelus*'
p. 113, line 42: '*Psarocolius*', not '*Psaracolius*'
p. 155, line 18: '*poecilorhyncha*', not '*peocilorhyncha*'
p. 157, line 7: '*Muscicapa*', not '*Musicapa*'

The Caxton & Holmesdale Press, Sevenoaks

Bulletin of the

British Ornithologists' Club

Edited by

HUGH F. I. ELLIOTT

Volume 95 No. 1 March 1975

The Annual General Meeting of the Club will be held at the Café Royal, 68 Regent Street, London W.1 on Tuesday, 20th May, 1975 at 6 p.m.

AGENDA

1. Minutes of the last Annual General Meeting.

2. Minutes of the Special General Meeting held on 19th November, 1974.

3. Report of the Committee (including *Bulletin* matters) and Accounts for 1974.

4. Election of Officers:—
   - (a) The Committee proposes Dr. J. F. Monk, D.M., as Editor vice Sir Hugh Elliott, Bt., O.B.E., M.A., who will be resigning towards the end of the year.
   - (b) The Committee proposes that Mr. M. St. J. Sugg, M.A., be re-elected Honorary Treasurer.
   - (c) The Committee proposes that Mr. R. E. F. Peal be re-elected Honorary Secretary.
   - (d) The Committee proposes Mr. C. E. Wheeler to serve on the Committee vice Mr. C. J. Mead, who retires by rotation.
   - (e) The Committee proposes Mrs. J. D. Bradley to serve on the Committee vice Lieut.-Colonel J. R. Neighbour, who has resigned.

5. Any other business of which notice shall have been given in accordance with Rule (7).

6. The following resolutions to amend the Rules of the Club will be proposed by the Committee as special resolutions in terms of Rule (14):

Resolution 1

That Rule (4) be hereby amended by the deletion of the first two sentences and the substitution in place thereof of the following sentences:—

Any member of the British Ornithologists' Union may become a member of the Club on payment to the Treasurer of the annual subscription. The first subscription of a Member who joins in October, November or December shall cover his membership until 31st December in the following year. The rate of subscription for Members shall be decided by the Committee. A Member who ceases to be a member of the British Ornithologists' Union shall also cease to be a Member of the Club unless the Committee shall consider it is in the interests of the Club to permit him to remain a Member of the Club.

Resolution 2

That Rule (10) be hereby amended by the deletion of the words:—

as soon as possible after each Meeting.

Resolution 3

That Rule (12) be hereby deleted and in place thereof the following Rule be hereby adopted:—

(12) **Subject to the terms of any bequest or gift, any stocks, shares, other securities, money or other property (whether real or personal) from time to time belonging to the Club may be vested in trustees for the Club if the Club shall by a special resolution so decide. Such special resolution shall appoint Trustees and shall specify the trusts under which the property is to be held.**

By Order of the Committee,

RONALD E. F. PEAL,

Honorary Secretary.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 95 No. 1 **Published: 20 March, 1975**

The six hundred and ninety-second meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 21st January 1975, at 7 p.m.

Chairman: Mr. J. H. Elgood, M.A., present 12 members and 3 guests.

The Chairman addressed the Club on "The Quelea problem", with particular reference to the current state of knowledge of *Quelea quelea* biology and consequential trends in the approach to and techniques used in its control. The talk was illustrated by slides and led to a lively discussion.

Forthcoming Meetings:

Tuesday, 20th May, Café Royal, 6.30 for 7 p.m.: an Australasian evening (New Guinea, New Zealand, Australia); speakers: J. H. Elgood, Sir Landsborough Thomson, Dr. C. M. Perrins.

Tuesday, 15th July, Imperial College, Exhibition Road, S.W.7, buffet supper 7 p.m.: R. S. R. Fitter on "The work of the Survival Service Commission and the problem of extinction".

Tuesday, 16th September, Café Royal, 6.30 for 7 p.m.: Lord Medway on "Ornithology of the New Hebrides".

Report of the Committee for 1974

During the year five meetings were held at the Café Royal, and the sixth, in July, was at Imperial College, South Kensington, with speakers before and after a buffet supper (costing £2·10 a head overall). Attendances totalled 204, the highest since 1965 (when 8 ordinary meetings were held). The Café Royal is central and conveniently accessible by public transport, while the dinner compares well for cost (at present £2·85 inclusive of V.A.T. and service) and quality with any other suitable venue in the vicinity. Nevertheless, in view of changing economic conditions the Committee would be glad to hear the views and suggestions of members about meetings, either at the Annual General Meeting or by letter.

In 1974, 26 new members joined, a net gain of 10 since there were 9 resignations and the Committee must record with deep regret the deaths of 7 members, Mr. C. W. Mackworth-Praed, O.B.E. (Hon. Secretary and Treasurer 1922-23 and 1929-35, Hon. Treasurer 1935-1936, Vice-Chairman 1945-1946 and Chairman 1956-1959), Col. the Rt. Rev. Mgr. F. O. Cave, O.B.E., M.C., Miss J. M. Ferrier, Col. P. R. Foulkes-Roberts, M.C., Miss M. V. Gilbert, Mr. J. M. D. MacKenzie and Professor E. Schouteden. Eleven new non-member subscriptions to the *Bulletin* were also received during the year and unremitting efforts continued to get all payments up to date and at the correct rate. At the end of the year 243 members and 122 non-member subscribers had paid in full and, in accordance with Rule (10), were entitled to receive the *Bulletin*. In view of the possibility of error, arising from the stricter application of this rule made necessary by rising costs, any paid up member who fails to receive his entitlement is asked to inform the Hon. Treasurer immediately so that the matter can be rectified.

The size of the *Bulletin* was again 176 pages and the quality and variety of papers offered have been well maintained. Mr. C. W. Benson completed five

years of distinguished editorship with the June number and was succeeded by Sir Hugh Elliott. The time from acceptance of a paper to publication is still normally between 3 and 5 months, although papers of the requisite standard by non-members occasionally have to be declined, or deferred with the consent of the authors, because of pressure of space.

An increase of 48% in printing costs necessitated the calling of a Special General Meeting on 19th November 1974, at which approval was given to raising the member's subscription from £2·50 to £3·50 from 1st January, 1975; also the Committee decided that the rate for non-member subscribers should be increased from £3·50 to £4·50 from the same date. Notice has been received of a further increase of 12½% in printing costs from 1st January 1975 and the Committee has initiated a study of further possible economies to meet the situation. The audited accounts for 1974 are not yet available but will be tabled at the Annual General Meeting and published in a later number of the *Bulletin*.

Explanatory Note on Amendments to the Rules to be proposed at the Annual General Meeting

The main changes to be proposed are that the Committee should be empowered to fix the annual subscription for members and that members should be permitted, at the discretion of the Committee, to remain Club members even if they cease to be members of the British Ornithologists' Union. High rates of inflation make it impossible to plan as far ahead as used to be practicable and it is becoming increasingly common for a Society to give its Committee power to decide the subscription rates. Other changes are that the first subscription paid by a new member joining in the last quarter of the year shall cover also the following calendar year, to remove the link between meetings and publication dates for the *Bulletin* and to replace Rule (12), so that subject to the terms of a bequest or gift, property of the Club may not, without reference to members be placed in trust beyond the control of the Club.

Status of the Kokikokiko *Acrocephalus aequinoctialis*

by Roger B. Clapp and Warren B. King

Received 7th November 1974

The Kokikokiko or Line Island Warbler is known to have occurred on three of the Line Islands of the central Pacific—Washington, Fanning and Christmas. The taxonomic status of two populations, *Acrocephalus aequinoctialis aequinoctialis*, the smaller form on Christmas Island, and *A. a. pistor*, the larger form on Fanning Island, is relatively well known as a result of early collections. Until recently the bird on Washington was known only from a single specimen collected by Harold Kirby during the summer of 1924. Wetmore (1925) compared this specimen with one taken by Kirby on Fanning in 1924 and considered them identical, but concluded that it would be wise "to secure a small series from each of the two islands in question for more critical comparison . . ." Later, Murphy & Mathews (1929) compared the Washington bird with two birds taken on Fanning by Stanley C. Ball and with the one collected there by Kirby. The authors concluded that the bird was "intermediate in size between the subspecies *aequinoctialis* and *pistor* . . . [and] probably represents a third race, confined to Washington Island . . ."

During the mid- and late 1960s all three islands were visited by expeditions of the Smithsonian Institution's Pacific Ocean Biological Survey Program

(POBSP). A series of ten specimens of the warbler was collected on Washington, and twelve birds were taken on Christmas. Wing chord and bill length (from nostril) of specimens in the POBSP series (housed in the National Museum of Natural History) and of specimens in the American Museum of Natural History were compared (Table 1). Mean wing length and bill length of males from Washington are significantly (Student's t test, $p < \cdot 01$) greater than those lengths in males from Christmas. A similar relationship holds for females from Washington and Christmas. The males from Fanning also have a significantly ($p < \cdot 01$) greater mean wing length and bill length than the Christmas males. The means of the two measurements for males from Washington and Fanning are not significantly different, however.

TABLE 1

Comparison of Measurements of the Kokikokiko on Washington, Fanning and Christmas Islands.

		Wing			*Bill from Nostril*		
		n	$\bar{x}$ and $s_{\bar{x}}$	range	n	$\bar{x}$ and $s_{\bar{x}}$	range
Washington	♂♂	8	80·16 ± 1·17	74·2–83·3	6	12·72 ± ·21	11·9–13·5
Washington	♀♀	5	75·43 ± ·80	73·9–77·2	4	12·23 ± ·19	11·7–12·6
Fanning	♂♂	3	77·77 ± ·81	76·3–79·1	3	12·13 ± ·27	11·6–12·4
Christmas	♂♂	16	73·33 ± ·53	70·5–77·8	16	10·90 ± ·08	10·4–11·6
Christmas	♀♀	11	70·85 ± ·78	68·0–77·8	11	10·87 ± ·09	10·4–11·5

Differences in plumage coloration among the three populations do not appear to exist. Some specimens have considerably more white on the tip of the tail and on the margins of the back feathers than others but these differences appear to be largely the result of wear or may be safely ascribed to individual variation. We conclude that the populations from both Fanning and Washington belong to the race *pistor*.

Recently Bakus (1967) suggested that the population on Fanning is extinct, basing his conclusion both on information from residents of the island and on his inability to find any warblers during a visit from June through August 1963. We may add that POBSP personnel visited the island four times in the period from March 1964 through December 1967 but never found this species.

Estimates, admittedly crude were made of the warbler populations of Christmas and Washington by POBSP personnel on a number of surveys. Christmas was visited 11 times between March 1964 and January 1968, but only two surveys were of sufficient duration to provide meaningful estimates. Our data suggest that the population is 300 to 400 birds. Estimates of the population on Washington are based on five visits made between March 1964 and December 1967. They vary from less than a hundred to a perhaps unreasonably large estimate of 2,000 birds. It is probably safe to assume that the Washington population is of the order of several hundred birds.

This is paper no. 109 of the Smithsonian Institution's Pacific Ocean Biological Survey Program.

References:

Bakus, G. J. 1967. Changes in the avifauna of Fanning Island, central Pacific, between 1924 and 1963. *Condor* 69: 207–209.

Murphy, R. C. & Mathews, G. M. 1929. Birds collected during the Whitney South Sea Expedition. VI. *Amer. Mus. Novit.* 350: 1–21.

Wetmore, A. 1925. A note on the Fanning Island Warbler. *Condor* 27: 212.

Spring notes on the birds of southern Montenegro with special reference to wetlands

by Jeffery Boswall and Rodney Dawson

12th November 1974

INTRODUCTION

Observations were made in southern Montenegro, Yugoslavia, between 27 April and 10 May 1974, with the assistance on two days of V. F. Vasic, and, throughout the period, of a party comprising Mrs. E. M. Barrett, D. P. Bayes, Miss E. L. Bell, T. A. Blanche, Mrs. Rita Cook, Dr. and Mrs. D. W. Dawson, and B. C. Peachey. They were supplemented by observations made from 4 to 17 May by Mr. and Mrs. Alan G. Channer and G. Davies; and from 4 to 18 May by Dr. D. A. Gunn. Some records made in 1967, from 6–17 May, by B. C. Peachey are included.

The area investigated was mainly along the coast from the village of Petrovac to the Albanian border and thence inland, to wetland localities. In addition, lowland scrub and dry cultivation, small towns and villages, areas of limestone outcrop and scrubby or bare hillsides up to about 700 metres were briefly examined. Only one visit to higher elevations was made, when A. G. Channer and G. Davies on 13 May in Lovcen national park reached about 1,500 m (the highest peak, Stirovnik, is 1,749 m). All localities mentioned are shown in the sketch map, Fig. 1.

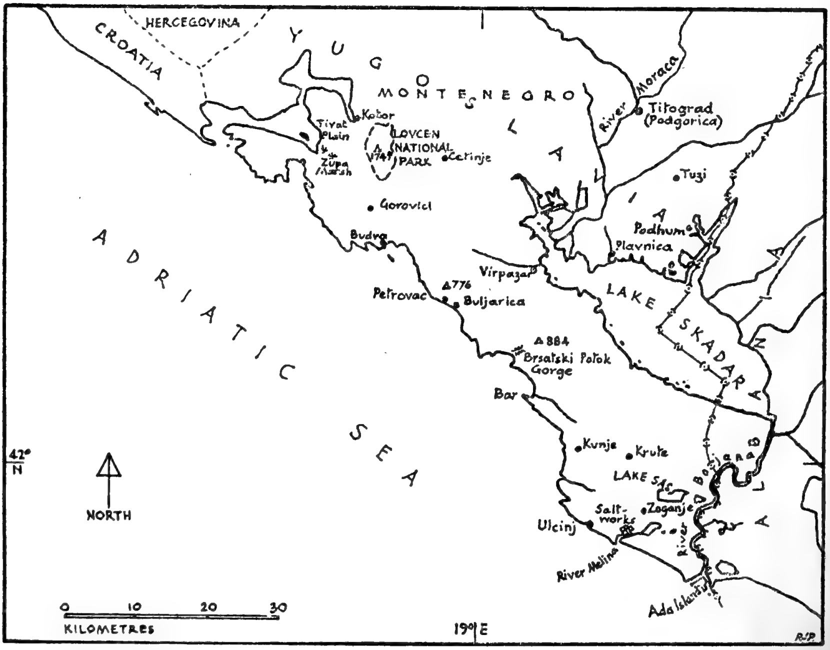

Fig. 1. Sketch-map of southern Montenegro.

Montenegro, the smallest of the six republics of Yugoslavia, is roughly diamond-shaped and about 190 km from north to south and 170 km from west to east. Baedeker (1964) quoted the population and area as 476,000 and 5,331 square miles, equivalent to about 35 people to 10 km^2.

The most recent work specifically devoted to Montenegrin birds would appear to be that of Reiser and von Fuehrer (1896); the latter also later published (1900–1901) a paper described by Ticehurst & Whistler (1932) as "listing 256 species from the boundary region of Montenegro and Albania, but most of the records are from the Montenegrin side". Although Ticehurst & Whistler (*op. cit.*) and Whistler (1936) specifically dealt with Albania, they also visited Montenegro, as now politically defined, from 24 April to 11 May, 1929, including the south. The only other 20th century references in English to the birds of the area appear to be by Lodge (1908), Thorpe *et al.* (1934) and Lind *et al.* (1962). However, some pertinent data from neighbouring regions of Yugoslavia are to be found in Sage (1964, 1966) and Géroudet (1965).

More recently, in their check-list of Yugoslav birds, Matvejev and Vasic (1973) indicate the status of species in the various republics and sub-divisions thereof, including southern Montenegro. Their list shows that 168 species are known and 16 believed to breed (or to have bred) in the south-western sector, i.e. the Adriatic coast and hinterland.

Along most of the 100 km of coastline the mountains sweep down to the sea, but are bounded on the south-east by the largest lake in the Balkans, Lake Skadar, about 40,000 ha in extent, of which rather less than half is in Albania. It is a "category A" wetland according to the Project MAR classification (Olney 1965). Stojkovic and Vasic (1968) review its birds and their environment in detail and Ivanovic (1970) lists the birds. It is the home, incidentally, not of the White Pelican *Pelecanus onocrotalus*, as reported by Olney (*op. cit.*) but of the Dalmatian Pelican *Pelecanus crispus*. The lake's longest axis is 44 km and the Bojana River flows from it about 30 km to the sea. The Bojana has a number of small tributaries, including one from Lake Sas, lying just inside Yugoslavia, which is about 1 x 4 km and bordered by *Phragmites:* at its eastern end there is a colony of Grey Herons *Ardea cinerea*, Purple Herons *Ardea purpurea*, Great White Egrets *Egretta alba*, Little Egrets *Egretta garzetta*, Night Herons *Nycticorax nycticorax* and Spoonbills *Platalea leucorodia*. V. F. Vasic (pers. comm.) says that in July 1970, the colony was also tenanted by Pygmy Cormorants *Phalacrocorax pygmaeus* and Glossy Ibises *Plegadis falcinellus*.

At the mouth of the Bojana is Ada, a triangular island of alluvium and sand, with 3 km sides. The eastern one faces Albania and no doubt for this reason there was no lodging for visitors until 1973. In 1974, the island was still unspoilt, offering a natural progression of habitats from open sandy shore to quite tall forest.

Zoganje Lake to the south of Sas is connected by the Melina River with the sea, south-east of the town of Ulcinj. The lake is smaller than it once was, its outer fringes on three sides having been converted into salt-pans. The "Zoganje River" referred to in the systematic list is a narrow fast-running stream flowing between the Ulcinj–Krute road and Zoganje village.

Only 2·4 km inland from Petrovac is a peak 776 m above sea level. The lower slopes are wooded with a variety of broad-leaved and some coniferous trees. There are olive groves, fig trees and some vineyards and vegetables

Fig. 2 Lake Sas.

Fig. 3. Zoganje Lake.

are grown on the few tiny flat areas or on terraces. Chickens are kept, sheep and goats herded in small flocks and cows usually tethered singly. Donkeys are still used for transport. However, along the coast the tourist industry has caused a decline in traditional ways of life and inland the factories of Titograd lure people from the land. As a result neglected terraces are reverting to a more natural habitat for birds. Tree cover above about 750 m is sparse.

The dramatic gorge of Brsatski Potok can be entered from the coast road 6 km north-west of the town of Bar and below a 884 metre peak. Vasic (1969) found 41 species nesting in the gorge, including the Alpine Chough *Pyrrhocorax graculus* at only 200 m above and 2 km from the sea.

Fig. 4. Buljarica Marsh, near Petrovac.

Fig. 5. Limestone hills at c. 600 m above Petrovac.

SYSTEMATIC LIST

In general all records have been checked against the details as to status, seasonality and distribution given in the list of Yugoslav birds by Matvejev and Vasic (1973). Without this work our observations would have been very difficult to evaluate, especially as details of distribution given by these authors differ in a significant proportion of species from those in Voous (1960) and in Peterson and others (1974). Species known by them to breed or to have bred in southern Montenegro are marked (*) and for the sake of completenses those not seen by us are included Unproven but probable breeders are denoted (?*). Our records are based on positive identifications unless otherwise indicated. Vernacular and scientific names, and order of species, follow Peterson *et al.* (1974).

Tachybaptus ruficollis. Little Grebe—L. Skadar, c.4 on 29.IV. family party 5.V., one or two calling 8.V.; L. Sas, 4 on 30.IV ; small lake just north of Bojana estuary, 1 on 29.IV.
?**Podiceps nigricollis*. Black-necked Grebe—L. Sas, 1, probably 2, on 30.IV., possibly breeding birds. Mouth of River Melina, 1 on 4.V and 6.V.
**Podiceps cristatus*. Great Crested Grebe—L. Sas, 2 on 30.IV; several, 2 nests, L. Skadar, several dates.
**Pelecanus crispus*. Dalmatian Pelican—L. Skadar, 1 on 29.IV, 6 (near Podhum) on 8.V, 4 or 5 on 9.V and 7 on 11.V. Known to breed on Skadar: c.50 adults and 24 young at nesting site near Albanian border in 1972 (Kempf & Wersinger 1974).
**Phalacrocorax carbo*. Cormorant—L. Sas, c.10 fishing on 30.IV, 2 on 3.V; L. Skadar, where known to breed, 1 on 5 and 8.V.
Phalacrocorax aristotelis. Shag—3 over the sea off Ulcinj, 15.V.
**Phalacrocorax pygmaeus*. Pygmy Cormorant—Plentiful on L. Skadar, several dates; L. Sas, several 30.IV, 3.V; Bojana estuary, several 20.IV, 4 and 10.V; Ulcinj salt-pans, 3 flying over on 6.V. Believed by V. F. Vasic (pers. comm.) to have nested at L. Sas in July 1970. About 100 pairs nesting, L. Skadar, 1972 (Kempf & Wersinger 1974).
**Botaurus stellaris*. Bittern—None seen or heard.
**Ixobrychus minutus*. Little Bittern—1 on 28.IV, 2♂♂ and 1♀ on 5.V, 8 unsexed on 7.V, Buljarica Marsh; L. Skadar, 1 on 8.V.
**Nycticorax nycticorax*. Night Heron—Probably several pairs nesting, L. Sas, 30.IV; one imm. near Bojana estuary, 4.V. In 1967, B. C. Peachey saw an adult at Buljarica Marsh and species nests on L. Skadar between Plavnica and Podhum (Kempf & Wersinger 1974).
**Ardeola ralloides*. Squacco Heron—Seen almost daily in suitable habitats, e.g. Buljarica Marsh; L. Skadar; L. Sas (possibly nesting): north of Bar; Melina River; Zoganje lake.
Bubulcus ibis. Cattle Egret—None seen. Matvejev and Vasic (1973, p.18) question whether Thorpe and others (1936) correctly determined this species at L. Skadar in 1934 and yet, only five or six years earlier, Ticehurst & Whistler (1929) described Little Egrets, Squacco Herons and Cattle Egrets as all "fairly common at Plavnica, on the Scutari Lake". Vasic (pers. comm.) believes that they too may have been mistaken.
**Egretta alba*. Great White Egret—L. Skadar, 1 on 11.V; eastern L. Sas, 2 on 16.V. In July 1970, Vasic (pers. comm.) also saw this species at the eastern end of Sas and presumed they were nesting, and this is probably the locality where Lodge (1908) photographed the species at a reed nest in 1906, having in the same year also found numbers nesting in the tops of a tall willow clump west of Plavnica on Skadar. In 1907 he found a reed-nesting colony at a locality presumed to be L. Zoganje. The species must almost certainly be rarer than formerly.
**Egretta garzetta*. Little Egret—Seen almost daily in suitable habitats, e.g. Buljarica Marsh (c.14 on 5.V); L. Skadar; L. Sas; Bojana estuary; Melina River mouth; and Zoganje L. Several pairs apparently nesting in mixed colony, L. Sas, 30.IV.
**Ardea cinerea*. Grey Heron—Nest with half-grown young in the mixed colony, L. Sas, 30.IV. Individual birds seen Bojana estuary, 30.IV and 4.V; and over Ulcinj salt-pans, 6.V. Frequently seen, L. Skadar, where in 1972, Kempf & Wersinger (1974) estimated 25–35 prs. in the principal colony.
**Ardea purpurea*. Purple Heron—Buljarica Marsh, 2 on 28.IV, an imm. on 5 and 6.V and 2 on 14.V. L. Skadar, several 29.IV, and other dates. Zoganje Lake, 1 on 6.V. Also represented in the mixed colony at L. Sas on 30.IV. Kempf & Wersinger (1974) report nesting on Skadar between Plavnica and Podhum.
**Ciconia ciconia*. White Stork—None seen.
?**Ciconia nigra*. Black Stork—None seen.
**Platalea leucorodia*. Spoonbill—Water-bird colony at L. Sas probably included at least 10 nesting pairs on 30.IV.
**Plegadis falcinellus*. Glossy Ibis—L. Skadar, 3 on 29.IV; L. Sas, where breeding suspected in 1970 (Vasic, pers. comm.), 30 on 3.V; Bojana estuary, c.55 on 4.V, but only 5 on 10.V; Ulcinj salt-pans, one on 15.V.
**Anser anser*. Graylag Goose—None seen.
**Anas platyrhynchos*. Mallard—Buljarica Marsh, pair on 28.IV; Bojana estuary, pair on 29.IV; south-east of Ulcinj, pair on 7.V; L. Skadar, 3 on 8.V.
**Anas crecca*. Teal—None seen.
Anas strepera. Gadwall—L. Skadar, c.10 on 29.IV.
Anas penelope. Wigeon—L. Skadar, pair on 20.IV. were presumably on passage; previously recorded in May in Yugoslavia only as "vagrants".
?**Anas acuta*. Pintail—Zoganje L., 18 on 6.V, also probably on migration.
**Anas querquedula*. Garganey—Buljarica Marsh, 7 on 28.IV, 2 pairs on 7.V; south-east of Ulcinj, 4 on 4.V; Zoganje L., 4 on 6.V; L. Skadar, one on 8.V. Probably all migrants.
**Anas clypeata*. Shoveler—Zoganje L., 2♂♂ on 6.V could indicate breeding.
?**Aythya ferina*. Pochard—L. Skadar, 3 (sex not noted) on 29.IV and one ♀ on 11.V.

**Aythya nyroca*. Ferruginous Duck—A pair and a single, 4.V, south-east of Ulcinj.
?**Aythya fuligula*. Tufted Duck—One ♂, L. Skadar, 8.V; recorded there before 1896 (Matvejev & Vasic 1973) and also seen by Lind *et. al.* (1962) 8–22 May 1959, but not in 1960 by Benson (1962), and never proved to breed. On the other hand, at the Albanian end of Skadar, Ticehurst & Whistler (1932) found the species common and many in pairs on 20 April, and added that they were known to breed.
Pandion haliaetus. Osprey—L. Skadar, singles on 5 and 8.V.
Pernis apivorus. Honey Buzzard—Singles on 7.V, Buljarica Marsh, and 16.V, Petrovac.
Milvus migrans. Black Kite—One, Buljarica Marsh, 7.V.
**Accipiter gentilis*. Goshawk—One, Buljarica Marsh, 28.IV.
**Accipiter brevipes*. Levant Sparrowhawk—Two identified by A. G. Channer and G. Davies over Petrovac on 12.V.
**Buteo buteo*. Buzzard—One near Petrovac, 28.IV, 3 on 7.V and one at 700 m above Petrovac, 8.V; L. Sas, one 3.V; L. Skadar, one 11.V; one halfway between Budva and Cetinje, 13.V.
**Hieraaetus pennatus*. Booted Eagle—None seen.
**Aquila pomarina*. Lesser Spotted Eagle—Two, almost certainly of this species, near Bojana estuary, on 29.IV and one positively identified there on 4.V.
**Aquila heliaca*. Imperial Eagle—One considered to be of this species seen from road c.700 m above Petrovac, 14.V.
**Aquila chrysaetos*. Golden Eagle—None seen.
**Haliaeetus albicilla*. White-tailed Eagle—None seen, though believed still to breed at L. Skadar.
**Neophron percnopterus*. Egyptian Vulture—L. Sas, 3 on 30.IV, one on 6.V; L. Skadar, one on 11.V. B. C. Peachey noted one over Petrovac on 10 May 1967.
**Gypaetus barbatus*. Lammergeier—None seen.
**Gyps fulvus*. Griffon Vulture—None seen.
**Circaetus gallicus*. Short-toed Eagle—L. Sas, 1 imm. 3.V; south-east of Ulcinj. 1 ad. 4.V.
**Circus aeruginosus*. Marsh Harrier—Buljarica Marsh, pair 28.IV, ♀ 5.V; L. Sas, pair seen 30.IV and 3 and 16.V, evidently nesting; one, north-east of Skadar, 8.V.
**Falco biarmicus*. Lanner—South-east of Ulcinj, one 7.V; near Tozi, 3 on 9.V. ♂ seen by B. C. Peachey in 1967, on 10.V, above Petrovac.
**Falco peregrinus*. Peregrine—Also recorded by Peachey in 1967, on 8.V, and seen this time over the town on 13.V: an imm. at L. Skadar on 13.V.
**Falco subbuteo*. Hobby—Singles Buljarica Marsh, 28.IV, Skadar, 30.IV and Sas, 3.V: two south-west of Ulcinj, 6.V; singles, again, over Petrovac 9 and 16.V.
Falco vespertinus. Red-footed Falcon—Ad. ♂ Buljarica Marsh, 7.V, another near Ulcinj and 3 plus a 1st-summer ♂ at Ulcinj salt works, on 15.V.
**Falco naumanni*. Lesser Kestrel—None seen.
**Falco tinnunculus*. Kestrel—Seen almost daily near Petrovac and on several dates, L. Skadar; one, L. Sas, 30.IV; one hunting over rubbish tip s.w. of Petrovac, several dates; one, hillside 700 m above Petrovac, 8.V; ♀ near Ulcinj, 15.V and pair Lovcen N.P., 13.V.
**Alectoris graeca*. Rock Partridge—Seen by Peachey on 10.V.1967 on bare slope above Petrovac at c.500 m., but none found in 1974.
**Perdix perdix*. Partridge—None seen.
**Coturnix coturnix*. Quail—One flushed on hill above Petrovac, 29.IV and 2 heard near L. Sas, 16.V.
**Phasianus colchicus*. Pheasant—Seen and heard near Petrovac on several dates; Bojana estuary, calling on 29.IV.
**Rallus aquaticus*. Water Rail—None seen in 1974, but one noted by Peachey on 13.V.1967 in the Buljarica Marsh.
**Porzana porzana*. Spotted Crake—None seen.
?**Porzana pusilla*. Baillon's Crake—None seen.
**Crex crex*. Corncrake—None seen or heard.
**Gallinula chloropus*. Moorhen—L. Skadar, several on several dates; L. Sas, one 3.V; Buljarica Marsh, 2 on 5.V.
**Fulica atra*. Coot—L. Skadar, rather common and nesting; L. Sas, several 30.IV and 3.V.
?**Haematopus ostralegus*. Oystercatcher—Buljarica Bay, singles 27, 28 and 30.IV; south-east of Ulcinj, one 29.IV, two 7.V; Bojana estuary, 3 on 4.V; Zoganje L., 8 on 6.V. No indication of nesting.
**Charadrius dubius*. Little Ringed Plover—Two on Ada island, 29.IV, possibly breeding; several on Bojana estuary, 29.IV and one, L. Sas, 30.IV.
**Charadrius alexandrinus*. Kentish Plover—Bojana estuary, 6 on 29.IV; Ulcinj salt-pans, 7 on 6.V; Ada island, 3 on 10.V.
Pluvialis apricaria. Golden Plover—One of the northern form in full summer plumage on shore at Ulcinj, 15.V.

Pluvialis squatarola. Grey Plover—Zoganje L., 3 on 6.V and 12 on 15.V.
**Vanellus vanellus*. Lapwing—Apparently suitable habitats, but none seen.
Calidris minuta. Little Stint—8 L. Skadar and 2 Bojana estuary, 29.IV; Ulcinj salt-pans, c.210 on 6.V and c.30, 15.V. Previously classified as a "vagrant" in Yugoslavia in May.
Calidris temminckii. Temminck's Stint—2 positively identified by Dawson & Peachey at Ulcinj salt-pans, 6.V, seem to be the first recorded in Montenegro, though species has been noted in transit elsewhere in Yugoslavia in May.
Calidris alpina. Dunlin—Ulcinj salt-pans, c.50 on 15.V.
Calidris ferruginea. Curlew Sandpiper—29.IV, one L. Skadar, and 3, Bojana estuary; near Petrovac, singles 5 and 6.V; Zoganje L., 14 on 16.V; all in partial or full summer plumage.
Calidris canutus. Knot—One in partial summer plumage, clearly seen by D. A. Gunn at Buljarica, 14.V; a new record for Montenegro, though the species is classed as a May vagrant and autumn transient elsewhere in Yugoslavia.
Calidris alba. Sanderling—2 in winter plumage Budva beach, 6.V (A. G. Channer and G. Davies); one in winter and one in intermediate dress, Bojana estuary, 10.V (R. Dawson and others); and 8 in winter plumage on shore near Ulcinj, 15.V (D. A. Gunn). These also seem to be first records for Montenegro, though the species has been noted elsewhere in Yugoslavia on spring and autumn passage.
Philomachus pugnax. Ruff—Ulcinj salt-pans, c.40 on 15.V.
Tringa erythropus. Spotted Redshank—Zoganje L., 4 on 6.V and 2 on 15.V, all in summer dress. Previously classed as only a vagrant in May throughout Yugoslavia.
**Tringa totanus*. Redshank—Bojana estuary, one 29.IV; Ulcinj salt-pans, one 15.V.
Tringa stagnatilis. Marsh Sandpiper—Zoganje L., two on 6 and 15.V.
Tringa nebularia. Greenshank—L. Skadar, one 29.IV.
Tringa ochropus. Green Sandpiper—Bojana River, one 29.IV.
Tringa glareola. Wood Sandpiper—Singles near Petrovac, 28.IV and north of Bar, 3.V; 14 south-east of Ulcinj on 4.V and still 12, 7.V; Zoganje L., 3 on 6.V.
**Tringa hypoleucos*. Common Sandpiper—Buljarica Marsh, one 28.IV, 3 on 5.V, 2 on 8.V; Bojana River, 3 on 29.IV; Ulcinj salt-pans, one 6.V.
?**Limosa limosa*. Black-tailed Godwit—Only one, on Bojana estuary 29.IV, no doubt on passage.
Himantopus himantopus. Black-winged Stilt—Zoganje L., 2 on 6 and 15.V.
**Burhinus oedicnemus*. Stone Curlew—At least 6 in apparently very suitable nesting habitat, Ada island, 29.IV; two near Tuzi, 8.V,—also a possible nesting habitat. One on shore at Ulcinj, 15.V.
**Glareola pratincola*. Pratincole—At least 25 on Ada island, 29.IV, behaving as if intending to nest, but only 4 seen there on 10 May. The sole record of nesting in southern Montenegro was at this locality in 1895, except that Lodge (1908) saw a few pratincoles on sandy flats near the Bojana River (presumably on the Montenegrin side) in late May or early June 1906, and found a broken egg-shell. We also saw c.6 south-east of Ulcinj on 7.V and 13 plus 3 more on the salt-pans, 15.V.
Larus minutus. Little Gull—North of Bar, 1 imm. 4.V.; L. Skadar, c.6 imm. on 5.V, 10 on 8.V (near Virpazar) and 1 imm. on 11.V; 16 imm. and 1 ad. in flooded field near Melina salt-works and c.15 more imm. on Zoganje L., 6.V; and 4 imm. at Ulcinj salt-pans, 15.V. Previously classed as only a vagrant in Yugoslavia in May.
Larus ridibundus. Black-headed Gull—Fairly common. L. Skadar, 29.IV, 5.V and 8.V, mostly imm.; Zoganje L., 6 imm. on 6.V. Except in breeding areas in northern Yugoslavia, previously classed as a vagrant in April/May.
**Larus argentatus*. Herring Gull—Seen daily on coast and Lakes Skadar and Sas, max. of 40 at a time, but generally by no means numerous. No evidence of breeding.
**Chlidonias niger*. Black Tern—Almost daily on Buljarica Marsh, L. Skadar, Bojana estuary, north of Bar, south-east of Ulcinj and Zoganje L., max. numbers (scores) east of Podhum, 8.V, and apparently about to nest in some Skadar localities.
?**Chlidonias leucopterus*. White-winged Black Tern—Buljarica Marsh, one 28.IV; L. Skadar, two 29.IV and 8.V; Ulcinj salt-pans, one 15.V. Nesting was suspected on Skadar in 1968 and 1969 (Matvejev and Vasic 1973).
?**Chlidonias hybrida*. Whiskered Tern—None seen. Possibly nested on L. Skadar, 1966 (Matvejev & Vasic 1973).
Gelochelidon nilotica. Gull-billed Tern—One, north of Bar, 4.V.
?**Hydroprogne caspia*. Caspian Tern—Only one seen, L. Sas, 30.IV. May have nested, L. Skadar, 1965–1969. In late May, or early June, 1906, Lodge (1906) saw "a large colony of Caspian Terns" but could find no eggs, on the same Bojana River site as the pratincoles (q.v.).
Sterna sandvicensis. Sandwich Tern—Bojana estuary, 6 on 29.IV; L. Skadar, 2 on 11.V. Described as a vagrant to Yugoslavia, though frequently recorded on coast (Vasic, pers. comm.).

**Sterna hirundo*. Common Tern—Several, L. Skadar, 29.IV, 8.V and 11.V, and possibly nesting at N.E. point of the Lake.
**Sterna albifrons*. Little Tern—Zoganje L., 4 on 6.V.
**Columba palumbus*. Woodpigeon—One, Petrovac, 9.V.
**Columba oenas*. Stock Dove—None seen.
**Columba livia*. Rock Dove—Feral birds, Petrovac, all dates. One, L. Skadar, 8.V, more like the wild type.
**Streptopelia decaocto*. Collared Dove—One, 6 and 7.V near Petrovac; heard at Budva, 6.V and two seen 10.V.
**Streptopelia turtur*. Turtle Dove—Seen daily in good numbers, and up to six together, evidently migrating. Neck patch, as closely observed, was pale blue and black not white and black.
**Cuculus canorus*. Cuckoo—Calling almost every day, from sea-level to 700 m.
**Tyto alba*. Barn Owl—None seen.
**Bubo bubo*. Eagle Owl—One in flooded thick woodland near Bojana estuary, 29.IV.
**Asio otus*. Long-eared Owl—None seen.
**Otus scops*. Scops Owl—Calling in vicinity of Petrovac.
**Athene noctua*. Little Owl—Near Zoganje village, pair 3.V; near Ulcinj, one 15.V; near Krute, one 16.V.
**Strix aluco*. Tawny Owl—Near Kotor, 4.V.
**Caprimulgus europaeus*. Nightjar—One on road s. of Petrovac, 29.IV; ♂ flushed from beach, Buljarica, 5.V; one dead on road near Petrovac, 6.V.
**Apus apus*. Swift—Seen almost daily in small numbers with *Apus melba* near Petrovac, and in very large numbers on 7.V.
**Apus pallidus*. Pallid Swift—Two clearly identified (D. A. Gunn), with *Apus apus*, near Petrovac 5.V. Has not nested in s. Montenegro since 1902 (Matvejev & Vasic 1973) and there are very few records for Yugoslavia as a whole (Vasic pers. comm.).
**Apus melba*. Alpine Swift—Daily at Petrovac and many other localities, sometimes in hundreds.
**Alcedo atthis*. Kingfisher—Singles, L. Skadar, 29.IV; Bojana estuary, 29.IV and, carrying food, 7.V; L. Sas, 30.IV and 3.V; and Melina estuary, 4.V.
**Merops apiaster*. Bee-eater—Buljarica, 3 on 6.V; numerous south-east of Ulcinj, 7.V; c.12 near the Ada island ferry, 10.V, and 4 crossing the Titograd plain, 8.V.
**Coracias garrulus*. Roller—South-east of Ulcinj, one 29.IV, 4 on 4.V, 10 on 7.V and one 10.V; near Tuzi, one 9.V; and near Kotor, 2 on 10.V.
* *Upupa epops*. Hoopoe—One near mouth of Bojana estuary, 29.IV; Petrovac, two 4.V and 7.V; Buljarica Marsh, one 5 and 8.V; L. Skadar, two 8.V; and S.E. of Ulcinj, two 7.V.
**Jynx torquilla*. Wryneck—None seen.
**Picus viridis*. Green Woodpecker—Heard near Petrovac.
?**Picus canus*. Grey-headed Woodpecker—None seen, though recorded by B. C. Peachey in beechwood 700 m above Petrovac, on 10.V.67.
**Dendrocopos major*. Great Spotted Woodpecker—None seen, though recorded in 1967 by B. C. Peachey in same area as previous species.
**Dendrocopos medius*. Middle Spotted Woodpecker—None seen.
**Dendrocopos leucotos*. White-backed Woodpecker—None seen.
**Dendrocopos minor*. Lesser Spotted Woodpecker—One in *Alnus* woodland near Bojana estuary. 10.V.
**Calandrella cinerea*. Short-toed Lark—On coast near Petrovac, 28. IV, not far from Buljarica Bay where 3 were seen on 8.V.67 by B. C. Peachey. Also on plains S.E. of Titograd, 14.V.
**Melanocorypha calandra*. Calandra Lark—Same locality near Titograd as previous species, 8, 9 and 14.V, and also noted by Peachey on 8.V.67 at Buljarica Bay.
* *Eremophila alpestris*. Shore Lark—None seen at the low to medium altitudes visited.
* *Galerida cristata*. Crested Lark—Several, Ada Island, 29.IV and 10.V, and N.W. of Bojana estuary, 4.V; S.E. of Ulcinj, 2 on 7.V; and near Tuzi, 2 on 19.V. Also noted in 1967 by Peachey, same place and date as the Calandra.
**Lullula arborea*. Woodlark—None seen.
**Alauda arvensis*. Skylark—None seen.
* *Riparia riparia*. Sand Martin—Most days from 28.IV; large numbers Buljarica Marsh, 5.V, and Ulcinj salt-pans 6.V. No sign of local nesting.
**Hirundo rupestris*. Crag Martin—Several near Zoganje, 30.IV and 3.V; one by railway tunnel near Virpazar, 5.V; and fairly common Lovcen NP.
**Hirundo rustica*. Swallow—Daily, mostly on migration but also prospecting for nest sites.
**Hirundo daurica*. Red-rumped Swallow—A few near Zoganje, 30.IV and 3.V; 2 pairs, L. Sas lodge, 16.V.
**Delichon urbica*. House Martin—Daily from 27.IV, when some already at nest sites, and still building 10–16.V.

**Anthus campestris*. Tawny Pipit—S.E. of Titograd, one 8.V; Buljarica, two 5.V and one 8.V (same day of month as noted by Peachey in 1967).
**Anthus trivialis*. Tree Pipit—Singles, Petrovac, 29.IV and 2.V.
**Motacilla flava*. Almost daily on migration, in parties of up to 50. Races identified were Blue-headed *flava*, Ashy-headed *cinereocapilla* and Black-headed *feldegg*. Variations of *feldegg* in this region are illustrated by H. Grönvold in Ticehurst & Whistler (1932).
**Motacilla cinerea*. Grey Wagtail—One singing, Zoganje River, 30.IV and 3.V, in suitable nesting habitat.
**Motacilla alba*. White Wagtail—Almost daily and carrying food at Buljarica 8.V., and Cetinje 13.V.
**Lanius collurio*. Red-backed Shrike—One or two ♂♂ daily from 28.IV, increasing to at least 12; first ♀ on 8.V, and higher proportion of ♀♀ by 10.V; all believed to be on passage.
**Lanius senator*. Woodchat Shrike—Almost daily, in numbers suggesting migration up to about 10.V, then fewer; one in song 7.V.
**Lanius minor*. Lesser Grey Shrike—S.E. of Ulcinj, 2 on 7.V, 7 on 10.V; Kotor, 4 on 10.V; Tuzi, two 8.V.
**Cinclus cinclus*. Dipper—None seen.
**Troglodytes troglodytes*. Wren—None seen.
**Prunella collaris*. Alpine Accentor—None seen.
**Cettia cetti*. Cetti's Warbler—Heard daily, sea level to 700 m.
Locustella naevia. Grasshopper Warbler—Singing, Buljarica Marsh, 8.V (D. A. Gunn), but presumed migrant.
**Acrocephalus schoenobaenus*. Sedge Warbler—Also in song though doubtless on passage, north of Bar, 3.V.
Acrocephalus palustris. Marsh Warbler—Possible author of song coming from bush in marshy area, Buljarica, 14.V.
**Acrocephalus scirpaceus*. Reed Warbler—Buljarica Marsh, one on 5 and 8.V.
**Acrocephalus arundinaceus*. Great Reed Warbler—Heard and seen commonly in the *Phragmites* at L. Sas, Ulcinj salt-pans, Melina and Bojana estuaries, Buljarica Marsh, and near Virpazar, L. Skadar.
**Hippolais icterina*. Icterine Warbler—Ada island, one 29.IV, in song.
**Hippolais olivetorum*. Olive-tree Warbler—One near Petrovac, 16.V.
**Hippolais pallida*. Olivaceous Warbler—Two, Bojana estuary, 29.IV; one south-east of Ulcinj, 7.V; one, Buljarica, 8.V; and 4, Petrovac, 14.V, all in song.
Sylvia nisoria. Barred Warbler—One near L. Sas, 16.V.
**Sylvia hortensis*. Orphean Warbler—Singing near Petrovac, 28.IV, 2, 3, 5 and 8.V., and partly completed nest found 5.V.
Sylvia borin. Garden Warbler—Seen and/or heard, 2, 3, 6 and 7.V, Petrovac; one near Virpazar, 11.V; presumably migrants.
**Sylvia atricapilla*. Blackcap—Singing, Petrovac, 28, 29.IV, 1–3, 5, 7 and 10.V.; also Ada island, 29.IV and at 700 m above Petrovac, 8.V.
**Sylvia communis*. Whitethroat—Almost daily often in good numbers, particularly 28.IV to 4.V, and mostly on migration; song more often uttered from perch than in flight.
**Sylvia curruca*. Lesser Whitethroat—Above Petrovac at 600 m, one on 29.IV and pair on 12.V; one singing, Lovcen NP, 13.V.
**Sylvia melanocephala*. Sardinian Warbler—Often seen near Petrovac.
**Sylvia cantillans*. Subalpine Warbler—Daily in most habitats, and in song. Completed, but eggless, nest 7.V. Local population has the breast of a noticeably vinous shade, though not as dark as that of a Dartford Warbler *Sylvia undata*.
**Phylloscopus collybita*. Chiffchaff—Heard at 700 m above Petrovac, 29.IV, 7.V, 8.V; common Lovcen NP, 13.V.
**Phylloscopus bonelli*. Bonelli's Warbler—At least 5, heard and seen in oaks in one small area N.W. of Petrovac, 6, 8 and 10.V, were noticeably yellowish rather than grey on head and throat, and looked if anything slightly smaller than nearby Willow Warblers *P. trochilus*. But the yellow leading edge of the closed wing and wing patch were well seen, though the lighter rump only once. Notes made at the time of the song read—"A simple brief trill of about 2 seconds' duration, more gentle than the song of the Wood Warbler *Phylloscopus sibilatrix* which it initially recalled, but without the Wood Warbler's accelerando and explosive quality. Occasionally . . . preceded by a few introductory notes, and once or twice followed by two alternating very high-pitched notes of *Regulus* quality". Occasionally the Willow Warbler-like "hou-eet" note was heard, but more frequently the birds used a note written down at the time as a quiet "weet weet", or "too too".

The yellow on the underparts was strictly limited to the chin and throat and did not extend onto the sides of the upper breast as in the Wood Warbler. The *bonelli* breeding in southern Montenegro, and also in Hercegovina, Macedonia and south-east Serbia is attributed to the race *Ph.b. orientalis* by Matvejev & Vasic (1973), but *orientalis* according to

Vaurie (1959) is "similar to nominate *bonelli* but distinctly greyer above, underwing and axillaries paler yellow . . ." Bannerman & Bannerman (1971) say of *orientalis* that "the chin and throat . . . have a faint yellowish tinge in autumn, but only in autumn". Géroudet (1973) refers to those seen in Greece, Bulgaria and Turkey as less silvery white on the underside of the body, and duller and greyer than nominate *bonelli*, but does not mention yellow. Nevertheless we think it likely that the "weet weet" or "too too" we heard corresponds with calls Géroudet found diagnostic of *orientalis* and that for this reason as well as on the grounds of geography our birds were *Ph.b. orientalis*.

Phylloscopus sibilatrix. Wood Warbler—Heard and seen, Ada island, 29.IV and 10.V, presumably in transit.

**Regulus ignicapillus*. Firecrest—None seen.

**Ficedula albicollis*. Collared Flycatcher—A probable ♀ near Petrovac, 4.V (A. G. Channer & G. Davies). Ticehurst & Whistler (1932) thought the female distinguishable from that of *F. hypoleuca* "even in the field, by the much greyer upper parts". In 1967, above Petrovac at 700 m, a ♂ was noted by Peachey on 10.V.

Ficedula parva. Red-breasted Flycatcher—A ♀, 5 and 6.V, Petrovac and a ♂ on the hills 600 m above the town, also on 6.V.

?**Muscicapa striata*. Spotted Flycatcher—Daily and obviously on migration, most numerous from 5.V onwards.

**Saxicola rubetra*. Whinchat—Daily records of a particularly well-marked passage, from sea-level to 700 m in ones, twos and up to six together.

**Saxicola torquata*. Stonechat—None seen in 1974; Peachey saw a ♂ immediately S. of Buljarica Marsh in mid-May 1967.

**Oenanthe oenanthe*. Wheatear—Single birds seen most days.

**Oenanthe hispanica*. Black-eared Wheatear—Birds of both phases at L. Sas, Petrovac and hills above it, Buljarica Marsh, N.E. shore of L. Skadar, etc.

**Cercotrichas galactotes*. Rufous Bush Chat—None seen; probably too early.

**Monticola saxatilis*. Rock Thrush—None seen.

**Monticola solitarius*. Blue Rock Thrush—In suitable habitats from sea level to at least 600 m, as far inland as Zoganje .

**Phoenicurus ochruros*. Black Redstart—2 ♂♂ (one in song) and 2 ♀♀ in or near Lovcen NP, 13.V.

**Phoenicurus phoenicurus*. Redstart—Petrovac area, 2 ♂♂ 28.IV and 1 ♂ 5.V.

Erithacus rubecula. Robin—One found dead, Petrovac, 27.IV; one singing, Virpazar, 11.V; 2 singing, Lovcen NP, 13.V.

**Luscinia megarhynchos*. Nightingale—Heard daily, if not hourly, in suitable habitats.

**Turdus merula*. Blackbird—Seen and/or heard, Petrovac, most days and especially at 600–700 m on 8 and 9.V; also Lovcen NP, 13.V.

Turdus philomelos. Song Thrush—Petrovac, one 3V.

**Turdus viscivorus*. Mistle Thrush—None seen.

?**Panurus biarmicus*. Bearded Reedling—None seen. "In the process of extinction in Yugoslavia" (Matvejev & Vasic 1973).

**Aegithalos caudatus*. Long-tailed Tit—Heard near Bojana estuary, 29.IV and family with 8 newly-fledged young 4.V; also one, 3.V, near Zoganje River.

?**Parus palustris*. Marsh Tit—None seen.

**Parus lugubris*. Sombre Tit—Petrovac, 2 on 1.V and one, Zoganje valley, 3rd May; one 4 km N.W. of the town on 8.V; Zoganje valley, one 3.V; and Brsatski Gorge, one or possibly two, 12.V.

Parus ater. Coal Tit—One in pines and suitable nesting habitat, Lovcen NP entrance, 13.V.

**Parus caeruleus*. Blue Tit—On hills above Petrovac, c. 600 m, on 29.IV, 7, 8 and 14.V., and nearer town on 9.V; pair near entrance to Brsatski gorge, 12.V; and one, Lovcen NP, 13.V.

**Parus major*. Great Tit—Daily in good numbers sea-level to 700 m; 4 nests located, one with fully feathered young on 5.V; first young on wing c. 12.V.

**Remiz pendulinus*. Penduline Tit—Heard and seen in riverine scrub, Bojana River, 29.IV, 4 and 10.V., presumably nesting.

?**Sitta europaea*. Nuthatch—None seen.

**Sitta neumayer*. Rock Nuthatch—From just above sea level (L. Sas) to about 600 m above Petrovac; seen carrying food 7.V.

Tichodroma muraria. Wallcreeper—None seen, but known to be present in Brsatski Gorge (Vasic 1969 and, pers. comm., 1974), where it must surely nest though not listed as a S. Montenegrin breeding species by Matvejev & Vasic (1973).

**Certhia familiaris*. Treecreeper—None seen.

**Certhia brachydactyla*. Short-toed Treecreeper—One seen and heard above Petrovac, 29.IV; a few singing in oaks near Brsatski gorge, 12.V.

* *Emberiza calandra*. Corn Bunting—Seen and heard most days in coastal zone.

* *Emberiza citrinella*. Yellowhammer—None seen.

* *Emberiza cia*. Rock Bunting—Zoganje River, one on 3.IV; a pair and one individual at 600–700 m above Petrovac, 7.V, and a ♂ at c. 500 m on 13.V.

* *Emberiza hortulana*. Ortolan Bunting—One in song c. 700 m above Petrovac, on 29.IV and 8 and 9.V.

* *Emberiza cirlus*. Cirl Bunting—Common in coastal habitats and up to 700 m; song often heard and a ♂ carrying nest material, 12.V.

* *Emberiza melanocephala*. Black-headed Bunting—First seen, a singing ♂, Petrovac, and another ♂ on N.E. shore of Skadar on 8.V. Thereafter soon common up to 700 m, though first ♀ not seen till 16.V., at Petrovac.

* *Emberiza schoeniclus*. Reed Bunting—One heard, River Melina, 6.V.

**Fringilla coelebs*. Chaffinch—At sea level round Petrovac, but more prevalent at higher altitudes above town, to at least 700 m.

**Serinus serinus*. Serin—3, Petrovac, 4.V and one on 6.V.

**Carduelis chloris*. Greenfinch—Often singing, Petrovac area and other suitable habitats.

**Carduelis carduelis*. Goldfinch—Common, often in song, in most habitats up to 700 m.

**Acanthis cannabina*. Linnet—Small flock at 700 m above Petrovac, 29.IV, and one at c. 600 m, 7.V; two, Buljarica, 8.V; and several S.E. of Ulcinj, 4.V.

**Loxia curvirostra*. Crossbill—None seen.

**Coccothraustes coccothraustes*. Hawfinch—Almost daily, Petrovac area; carrying food, 7.V; also Brsatski gorge, 12.V.

**Passer domesticus*. House Sparrow—Daily round human habitations. At Petrovac also breeds in trees, including olives and cypress, and still collecting nesting material 30.IV.

**Passer hispaniolensis*. Spanish Sparrow—♂♂ seen: Petrovac, one with *domesticus*, 27.IV, two, 9.V, one 3 km to the south-east, 28.IV and 5.V; one, again with many *domesticus*, just E. of Ulcinj, 28.IV; and one, Virpazar, 11.V. In addition, a colony of about 50 pairs of sparrows in cypress at entrance to Ulcinj salt-works were mostly *hispaniolensis*, as were colonies of c.20 pairs each in two buildings. Matvejev & Vasic (1973) list breeding localities but overlooked Ticehurst & Whistler's 1929 observation of a "small flock pairing and fighting in the cultivated Tivat plain". They quote Benson *et al.* (1962) as having found the species near Skadar but the correct reference is to Lind *et al.* (1962), who identified *hispaniolensis* at Plavnica between 8 and 22.V.1959. The species seems to be expanding its range northwards into Montenegro (V. F. Vasic, pers. comm.).

Petronia petronia. Rock Sparrow—One heard and seen at Virpazar, on a cliff top, 15.V. Apparently the first record in Montenegro this century and, although on the northern edge of its Balkan range, perhaps breeding.

Sturnus vulgaris. Starling—One heard, Petrovac, 6.V; 3 on wires near Kunje, 16.V.

**Oriolus oriolus*. Golden Oriole—Petrovac area, pair 28.IV, ♀ 7.V, pair 8.V and 3 on 9.V; a ♂, Bojana estuary, 29.IV and again on 4.V; ♂, Buljarica Marsh, 5.V.

* *Garrulus glandarius*. Jay—One, Zoganje valley, 3.V; two in woods 700 m above Petrovac, 8.V, and one on 13.V; two near Gorovici, 11.V; and two between Budva and Cetinje, 13.V.

**Pica pica*. Magpie—Seen daily in good numbers.

**Nucifraga caryocatactes*. Nutcracker—None seen.

**Pyrrhocorax graculus*. Alpine Chough—At c. 700 m above Petrovac, over 50 on 7.V and 13 on 8.V; Lovcen NP, 11 on 13.V and c.50 on same day 10 km to the west; and 6 in Brsatski gorge, 15.V.

**Corvus monedula*. Jackdaw—Almost daily, particularly in towns such as Ulcinj and Virpazar, and in farming areas. Carrying nesting material into large barn at Ulcinj salt-works, 6.V; also on rocky cliffs, Zoganje valley, 30.IV and 3.V.

**Corvus corone cornix*. Hooded Crow—Daily in most habitats, singly or in pairs; picking up food from water surface, Skadar, 8.V.

**Corvus corax*. Raven—Petrovac, one 5.V. and two on 10, 14 and 15.V (one apparently carrying food); one near Virpazar, 11.V.

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The status of *Estrilda kandti* and *Estrilda atricapilla graueri*

by A. Prigogine

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Reichenow (1902) described a specimen collected by Kandt near lake Kivu as *Estrilda kandti*. Some years later Neumann (1908) published the description of *Estrilda atricapilla graueri* with Mt. Sabinyo as type locality. Since the type of *kandti* is a very young bird which, moreover, has been conserved in alcohol (Reichenow 1902), authorities were unable to agree, until the publication of Chapin's Birds of the Belgian Congo (1954), whether *kandti* is a juvenile of *E. atricapilla* or a juvenile of *E. nonnula*. Reichenow (1912) had in fact already raised the question whether *kandti* is a juvenile of *graueri*. Sclater (1930) and Jackson (1938) considered *graueri* as synonymous

with *kandti*. Yet all recent specialists, such as Chapin (1954) and White (1963), are of the opinion that *kandti* is a juvenile of *nonnula* and that *graueri* is a valid subspecies of *atricapilla*.

At the request of Gyldenstolpe, Neumann examined the type of *kandti*, but did not come to a definite conclusion: "The scarlet is bright as in *nonnula*, while the belly and the under tail-coverts are dark and go in the line of *graueri*" (Neumann quoted by Gyldenstolpe 1924). Yet, taking into consideration the description of the underparts of *kandti* (pale sepia brown, lighter on the belly which is isabel brown), Grant & Mackworth-Praed (1945) concluded, without seeing the type, that *kandti* must be a young *E. nonnula*. Finally, some years later, Grote examined the type of *kandti*. Since its underparts were light brownish, Grote did not believe it could possibly belong to the species *atricapilla* (Grote quoted by Chapin 1954). He stated at the same time that the two co-types were undoubtedly *nonnula*.

While working on the populations of *E. atricapilla* in the Republic of Zaire (Prigogine, in press), I had the opportunity to examine the type of *kandti* sent very kindly on loan to Tervuren by Dr. G. Mauersberger. Hoping to settle this problem I compared this type first with very young *E. n. nonnula* and *E. atricapilla avakubi* and, later, with young *graueri* sent on loan by the American Museum of Natural History.

The type of *kandti* is a very young specimen as could already be inferred from the measurements of the wing (40 mm) and tail (23 mm) given by Reichenow (1902, 1904/5). Owing to the bad condition of this specimen, I did not take new measurements. The head is brownish black (black in the original description), the upperparts of a uniform sepia brown, the chest and the belly light sepia brown becoming darker on the abdomen. The upper and the under tail-coverts are no longer present.

Bannerman (1949: 352) has already drawn attention to the fact that immature *E. nonnula* have a mantle and back almost grey-brown with hardly any indication of barring, while the mantle and back of immature *E. a. atricapilla* are sooty-brown with a faint indication of barring (Bannerman 1949: 355). In reality, the difference is much more striking in very young birds. As may be seen from Table 1, the youngest individuals of *E. nonnula* have a uniform back without any barring. The underparts are white with only a light wash of brown, the under tail-coverts light brownish grey. Only at a more advanced age, when the length of the wing has reached 45-47 mm and the tail 39-43 mm, does the barring start to appear on the upperparts, first on the primaries and then on the back. On the contrary, even the youngest specimens of *E. atricapilla avakubi*, with a very short tail, already show conspicuous barring on the back. The underparts are brownish-grey, the under tail-coverts black or blackish-grey.

For *E. atricapilla graueri*, Chapin (1954) described the juvenal plumage as smoky brown on the back, the lower breast and abdomen, but he did not mention the presence of barring on the back. Very young *graueri* do not seem to exist in collections, but the four juveniles examined (see Table 1), though already at an advanced age, have no conspicuous barring on the back, in contrast with *avakubi* (and probably nominate *atracapilla*).

The type of *kandti* also has the back of a uniform brown and its colour matches exactly the back colour of *graueri*, while young *nonnula* have the back more greenish grey, less warm. The throat of *kandti* has a brownish wash, that of *graueri* is grey to whitish grey. The lower part of the belly is dark sepia brown in *kandti*, while it is blackish brown in *graueri*. To sum up, the underparts of juvenile *graueri* are a shade darker than the type of *kandti*, but this

small difference is due to the very young age of *kandti*. In any case, the underparts of *nonnula* are quite different, being white with a brownish wash, the lower belly and the flanks light brownish grey and distinctly less dark than those of *kandti*. I also asked Mr. P. Devillers, Institut royal des Sciences Naturelles, Brussels, to compare the type of *kandti* with the series of young *nonnula* and *graueri* and he agreed that *kandti* has close resemblance to *graueri* and not to *nonnula*. Therefore I conclude that *kandti* is a juvenile of *graueri* and that, since *kandti* is the earlier name, *graueri* must be considered a synonym of *kandti*.

I am most grateful to Dr. G. Mauersberger for the loan of the type of *kandti* and to Mr. J. Farrand for the loan of the specimens of *graueri* in juvenal plumage. I also am indebted to Mr. P. Devillers who repeated the comparison and kindly read the manuscript.

TABLE I

Comparison of young birds of *E. atricapilla avakubi* and *E. atricapilla graueri* with *E.n. nonnula*

Species	*Sex*	*Locality*	*Wing*	*Tail*	*Upperparts*	*Underparts*	*Under tail-coverts*
E.n. nonnula	♀	Lundjulu	41	19	uniform	white buff	light brownish grey
	♂	Lundjulu	41	20	idem	idem	idem
	♀	Kakanda	42	21	idem	idem	idem
	o	Butembo	42	—	idem	idem	idem
	♀	Lutunguru	45	39	faint indication of barring on wings	idem	idem
	♀	Kamituga	46	43	indication of barring on back	idem	idem
	♂	Lutunguru	47	40	idem	idem	idem
	♀	Kakanda	47	42	uniform	idem	idem
E.a. avakubi	♀	Kamituga	40	18	barring well visible	light brownish grey	black
	♂	Ikela	42	23	barring visible	idem	blackish grey
	o	Yokambo	43	26	idem	idem	black
	♀	Luluabourg	43	28	barring well visible	grey with faint indication of barring on belly	idem
	o	Ikela	43	42	barring visible	light brownish grey with faint indication of barring on belly	idem
	♂	Bolafa	46	42	barring well visible	idem	blackish grey
E.a. graueri	♀	Mulu	42	41	faint indication of barring	brown	blackish brown
	♀	Nyemilima	45	41	back uniform, but barring visible on sides of nape	idem	idem
	o	Mikeno	43	42		idem	idem
	♀	Kandashomwa	44	45	uniform	idem	idem

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New Subspecies of *Caprimulgus sericocaudatus* from the Amazon River Basin

by Robert W. Dickerman

Received 13th November 1974

The Silky-tailed Nightjar *Caprimulgus sericocaudatus* is an exceedingly rare species in North American ornithological collections. It is represented by only six specimens from Misiones Province of Argentina; two from southeastern Brazil (Sao Paulo and Curitiba); and the two specimens, on which the species was described, from the Rivioli (Massena) Collection, labeled only South America. De Schauensee (1970) also included Paraguay (Capitan Meza, alto Parana) in the range of the species, but I have not been able to locate (nor could he provide me with) the reference to this locality. The population of the Amazon basin is represented by a specimen from Santarem, Brazil and one from Yarinacocha in Amazonian Peru.

Recently Dr. Hannalore E. Hinsch made a collection of birds at the Instituto Veterinario de Investigaciones Tropicales y de Alturas 59 km east of Pucallpa, Loreto, Peru, while carrying out a survey for arthropod-borne viruses. The birds were shipped frozen to New York where they were prepared and identified by the author to provide voucher specimens for study. Included was a single specimen of this species.

Upon comparison of this individual with the three specimens available in the American Museum of Natural History, differences were noted and thus the above enumerated material was assembled (except for the two specimens of the type series).

The characters noted proved consistent, and comparisons of representative birds with the type series in the Academy of Natural Sciences of Philadelphia immediately indicated that the name *sericocaudatus* was not based upon birds from the Amazon basin, and that population awaited description. However, first it was necessary to restrict the type locality of the nominate form. Stone (1899) compiled a list of the types in the Academy and cited the bird upon which the description was based (No. 21,905) as the type and it bears a type label although it was not so designated in the original description. Cory (1919) gave the range as "southeastern Brazil, Bahia, southwards". Mr. R. M. de Schaeunsee (in conversation) informed me that most early collections from southeastern Brazil were exported from Bahia or Rio de Janiero. The species was not recorded from the state of Bahia by Olivero M de O. Pinto (1935). As first revisor of the species, I suggest restricting the type locality of *Caprimulgus* (*Antrostomus*) *sericocaudatus* (Cassin) 1849 to the vicinity of Rio de Janiero, Brazil, that being a probably source of the type

material closest to the range of the species as indicated by presently available specimens.

It should be noted that Cory, and de Schauensee (*loc. cit*) were in error in citing the publication date for the species as 1848. The original description bears the date 30 October 1849 and was correctly cited by Stone (*loc. cit.*) and Peters (1940).

The population of the Amazon River Basin may now be described as:

Caprimulgus sericocaudatus mengeli subsp. nov.

Diagnosis: Smaller (see Table) and darker, more sooty, than the nominate form.

TABLE

Measurements of *Caprimulgus sericocaudatus*

	wing		*tail*	
	males	*females*	*males*	*females*
sericocaudatus	177–182 179·4 (n=5)	167–184 175·8 (n=5)	144–148 146·4 (n=5)	136–147 141·4 (n=5)
mengeli	157 & 163	156	124 & 127	116*

* Tail apparently retained from first basic plumage.

Type: American Museum of Natural History, no. 811079, adult male, collected by Hannalore E. Hinsch, on 15th November 1972 at Instituto Veterinario de Investigaciones Tropicales y de Alturas, 59 km east of Pucallpa, Loreto Department, Peru. Original field number HEH-A-506.

Range: Amazon River basin.

Material: Besides the type, a ♂ from Yarinacocha, Peru, and a ♀ from Santarem, Brazil.

Name: With great satisfaction I name this form for Dr. Robert M. Mengel, student of Caprimulgids and friend.

Notes: De Schauensee (1970) has described the female plumage of the species. The "young" bird mentioned in the original description is in reality another adult male with a slight difference in wing formula. The only female of *mengeli* is the Santerem specimen, which appears to be an immature. Its rectrices are narrower and more rounded and are only diffusely tipped with buff as compared to those of the other available apparently adult females.

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On the systematic position of *Pholidornis rushiae*

by C. J. Vernon and W. R. J. Dean

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The systematic position of *Pholidornis rushiae* as its colloquial name of Tiny Tit-Weaver rather suggests, is so uncertain that Hall & Moreau (1970) do not even place it in a family and "purely for convenience" put it between the Sittidae and the Nectariniidae. Prior to this the species has been variously placed in no fewer than seven different families, as noted by Traylor (1968: 389), who was equally doubtful and left it in a *genus incertae sedis*. In August 1973, in coffee-forest near Salazar, Angola (9° 18′ S, 14° 54′ E.), observations were made on the species which have allowed some further deductions to be made about its relationships.

P. rushiae was found in small flocks of up to seven birds, which formed cohesive units independent of other species. They fed amongst the leaf and flower buds of canopy trees. Often they would hammer at twigs, in the manner of a woodpecker, and even hang beneath a twig to do so. In such instances they may have been taking sessile scale-insects, Coccidae, which have been previously recorded as a food item (Bannerman 1953, Chapin 1954). The birds had a twittering contact call and direct flight, observations which also accord with those of earlier observers (Bannerman 1953, Chapin 1954, Serle 1965).

One party of seven *P. rushiae* included two juveniles. The juvenile plumage lacks the streaking of that of the adults (see also Serle 1965). The young were fed by at least four of the adults, and importuned them with a low sibilant note and quivering of wings.

Calls, social behaviour, flight, feeding behaviour, size and juvenile plumage all resembled those of the penduline-tits *Anthoscopus caroli* and *A. minutus*. Published descriptions of its nest, roosting and breeding behaviour (Chapin 1954, Serle 1965) also fit with the penduline-tits. In contrast, we could see little resemblance to any sunbird, waxbill or weaver which are among the families to which it has been attributed. We suggest that *P. rushiae* be regarded as either a member of the Remizidae or a remarkable case of convergence with that family.

We are grateful to the Peabody Museum of Natural History, Yale University, for the opportunity to make these observations.

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The classification of the manakins

by D. W. Snow

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No substantial advance can be made in the classification of the manakins (Pipridae) until detailed anatomical studies have been made of all the genera and the displays and social organisation of the many little known species

have been studied in the field. Analysis of egg-white proteins of the more atypical genera would also be very desirable, but since the nests of some of them have never been found this is not likely to be a practicable method for a very long time. In the circumstances it may seen umprofitable to discuss the classification of the family, but the forthcoming publication of volume 8 of Peters's *Check-list of birds of the world* has necessitated a revision of it, in an attempt to establish a sequence of genera and species in accordance with the best available evidence.

The late J. T. Zimmer prepared a manuscript of the Pipridae for Peters's *Check-list*, which was edited and amended by James Bond in 1957. This forms the basis for the treatment to be adopted in the forthcoming volume, and in particular for the recognition of subspecies, unless subsequent research has necessitated modification. The further revision that has been necessary has mainly been at the species level or above. The object of the present paper is to discuss the problems that have arisen in the course of this revision, and to explain the reasons for the *Check-list* treatment. The discussion follows the same lines as a previous paper on the classification of the related family Cotingidae (Snow 1973), but the general points made in that paper will not be repeated.

THE LIMITS OF THE FAMILY PIPRIDAE

The typical manakins (*Manacus*, *Pipra*, *Chiroxiphia* and a few smaller genera) are a well-defined group. They are small forest-living birds, sexually highly dimorphic, with elaborate courtship displays in the males (reviews in Snow 1963, Sick 1967). In addition to the typical manakins, however, a number of more or less atypical genera have been allocated to the family, in some cases with doubtful justification.

The main problem has always been how to separate the manakins from the Cotingidae and Tyrannidae, or indeed whether they should be separated. Since Sclater (1888), one of the main bases for separating them has been their foot structure and the form of their tarsal scutellation. Ridgway (1907) laid particular importance on these characters, which may be summarised as follows:—

Pipridae	Tarsus exaspidean; second phalanx of outer toe wholly united with that of the middle toe.
Cotingidae	Tarsal scutellation of various types, but never exaspidean; second phalanx of outer and middle toes not united.
Tyrannidae	Tarsus exaspidean; neither outer nor inner toe united to middle toe by more than the basal part of the first phalanx.

The difficulty has been that a too rigid application of these criteria leads to the probable misplacement of a few genera; but no better criteria have been suggested, and recent anatomical studies have shown great variability within all three families, so that it is unlikely that clear-cut morphological criteria will be found. As regards the manakins, a classification based primarily on foot structure leads to the inclusion of a number of genera that differ markedly from the typical manakins. Some of the aberrant genera are very little known (e.g. *Chloropipo*, *Neopipo*, *Heterocercus*), and there is no reason not to follow the usual classification. Three genera, however, are especially problematical: *Schiffornis*, *Sapayoa* and *Piprites*.

Schiffornis

Sclater (1888), Hellmayr (1929) and Meyer de Schauensee (1966) all placed *Schiffornis* in the Pipridae. Its foot structure and tarsal scutellation are

typically piprine, according to the definition given above. In other respects it is very unlike the typical manakins, and in recognition of this Sclater placed it in a separate subfamily (with four other genera of which one, *Ptilochoris* (=*Laniisoma*), is now placed in the Cotingidae), and Meyer de Schauensee noted that its family status is uncertain. *Schiffornis* has several morphological characters different from those of typical manakins: a compressed, distinctly notched upper mandible, fairly long, strong tarsi, a longish tail, and dull plumage with the sexes alike. Recently Ames (1971) has found that its syringeal structure is quite different from that of any other manakins studied, being apparently quite like that of the cotingid genus *Lipaugus*. Perhaps as a consequence, its voice is much more musical than is usual for a manakin. The nest is also quite unlike a typical manakin's (Wetmore 1972). In its social organisation (males emancipated from the nest, spending most of their time advertising themselves vocally, probably within mutually exclusive territories—Skutch 1969, pers. obs.) it has parallels within both the manakins and the cotingas, as well as the tyrant-flycatchers.

Further study may show that *Schiffornis* should be placed in the Cotingidae. It is perhaps even more likely that it will show that the traditional division of the manakin-cotinga-flycatcher complex into three families cannot be maintained. Meanwhile, it seems best to retain *Schiffornis* in the Pipridae, simply because there is no convincing evidence that it is more closely related to either of the other families.

Sapayoa

Little new light has been thrown on this puzzling genus since Hartert (1903) originally described it. His tentative allocation of it to the Pipridae in spite of several anomalous characters was presumably influenced by the fact that it has a typically piprine foot structure. Recently Wetmore (1972) has discussed it further, and has reported a peculiarity of the dorsal feather tract. In default of conclusive evidence, Wetmore provisionally retained the genus in the Pipridae, and it is intended to follow the same course in Peters's *Check-list*.

Piprites

This genus differs in several ways from the typical manakins. The outer toe is wholly free, or nearly so, from the middle toe, the beak is parine in shape, and the wing feathers have pale terminal spots, forming bars, much more like a tyrannid than a manakin. Ames (1971) found that the cartilaginous structure of the syrinx "is reminiscent of that in the small tyrannids *Myiobius* and *Terenotriccus*, while the musculature differs only in being narrower". Slud (1964) reports that the voice of *P. griseiceps* in Costa Rica is flycatcher-like and that its general behaviour is very unlike that of a manakin; he found it only in mixed foraging parties in the company of antwrens and other insectivorous birds.

It seems likely that further research will confirm that *Piprites* is nearer to the tyrant-flycatchers than to the manakins; but until then it seems best to follow the usual practice and retain the genus in the Pipridae, while indicating that its removal may eventually prove necessary.

RECOGNITION OF GENERA

Most piprid genera are so distinct (at least in the males) thet there has been general agreement about their recognition. A few genera, however, are controversial, either because they contain one species that is very distinct from the others or because they are apparently very close to some other genus The debated genera are the following.

Allocotopterus

There seems little doubt that this genus is closely related to *Machaeropterus*. The two genera are allopatric, *Allocotopterus* apparently representing a well-marked derivative of *Machaeropterus* stock that evolved in isolation west of the Andes. In both genera the secondary feathers are extraordinarily modified in the adult males. Hellmayr (1929) considered the nature of the modifications to be the "principal point of distinction" between the genera; he nevertheless questioned the propriety of recognising *Allocotopterus*. In fact, the way in which the secondaries are modified is not so different in the two genera, though the modification is more extreme in *Allocotopterus*. In both, there is a gradual increase in the modification from s1 to s7, s7 showing the extreme degree of thickening of the shaft; s8 is modified less and in a different way, and this modification progressively decreases in s9 and s10.

In other manakin genera there are cases where feather modifications of adult males vary markedly within an undoubted superspecies. For this reason, and also because it is preferable to use generic groupings as an indication of relationships rather than as a means of emphasising differences, it seems best to merge *Allocotopterus* with *Machaeropterus*.

Chloropipo

Hellmayr (1929) and later authors have questioned the allocation of *C. unicolor* to this genus. *C. unicolor* is sexually dimorphic, unlike the other members of the genus, and shows some structural differences. No detailed study has been made of any species of *Chloropipo*, and until this has been done it would be premature to split the genus. If *C. unicolor* were removed, a new monotypic genus would have to be set up.

Piprites

P. pileatus is very distinct from the two other species, *chloris* and *griseiceps*. It shows the beak characters of this genus in much less marked degree, it is sexually dimorphic, and its plumage is of quite different colour (mainly brown instead of green). Its distribution in the coastal region of southeast Brazil, where it may overlap with the widespread *P. chloris*, suggests an early isolate from the main *Piprites* stock. In many other genera of birds rather well differentiated species are found in the southeast Brazilian coastal region, where at some time in the past the forests evidently underwent a long period of isolation from the main Amazonian forest. *P. chloris* presumably spread into southeast Brazil and adjacent areas from the Amazonian region at a much later date.

Hemipipo is available as a generic name for the green forms (*chloris* and *griseiceps*), but there are insufficient grounds for splitting this small group of species, which are probably monophyletic.

Teleonema

The affinity of *Teleonema* with *Pipra* has long been recognised, the genus being based only on the elongated wire-like tail feathers of the adult male. Recently Haffer (1970) has shown that *T. filicauda* is in fact a member of the *Pipra aureola* superspecies. Clearly, the modification of the tail feathers in the male, as so often in cases of this sort, does not indicate any wide genetic divergence, and *Teleonema* should no longer be recognised.

THE SEQUENCE OF GENERA

The general principle followed in Peters' *Check-list* is to proceed from the more unspecialised or "primitive" genera to the more specialised. Such a sequence has been adopted for the Cotingidae (Snow 1973), and for consistency should be followed for the Pipridae too, although it must be stressed

that unspecialised means only "lacking the extreme sexual dimorphism, accompanied by elaborate displays, that characterises the typical manakins".

Previous classifications have not followed such a sequence. Sclater's sequence (1888) followed directly from his key, which resulted in allied genera being separated by others more distantly related. Ridgway's sequence (1907), based on a different key, was also unnatural. Hellmayr (1929) began the family with the atypical *Piprites*, continued with the typical, specialised manakins in a sequence that separated some genera that are probably closely related, and ended with the atypical *Schiffornis*, *Sapayoa*, and finally *Neopelma* and *Heterocercus*, neither of which is as problematical as *Schiffornis* and *Sapayoa*. Zimmer (MS) followed Hellmayr exactly. Meyer de Schauensee (1966) adopted quite a different sequence, beginning with the typical manakins in as natural an order as possible and ending with the unspecialised genera and those whose allocation to the family is questionable.

The sequence to be used in Peters's *Check-list* follows. It may be noted that it is logically close to Meyer de Schauensee's sequence, but the order is reversed.

Schiffornis *Sapayoa* *Piprites*	Allocation to the Pipridae uncertain. The sequence of these genera is arbitrary; all show some affinity to the cotingas or tyrant-flycatchers and are unspecialised in the direction taken by the typical manakins.
Neopipo *Chloropipo* *Xenopipo*	Unspecialised manakins, lacking sexual dimorphism in plumage or, if sexually dimorphic, with mainly black male plumage.
Antilophia	Male plumage (black, with scarlet head and back) suggests affinity with *Pipra*, but behaviour (Sick 1967) suggests that the resemblance may be convergent and that the genus should not be placed among the specialised manakins. Its peculiar range, unique in the manakins (tableland of south-central Brazil), also suggests that the genus may be primitive. This region is a geologically very ancient land-area, where a number of primitive plant and animal forms have survived, probably from a period ante-dating the formation of the lowland Amazonian forests (Haffer 1974).
Tyranneutes *Neopelma*	Unspecialised manakins with little sexual dimorphism in plumage (olive-green, with golden crown feathers), showing some similarity in displays.
Heterocercus	Isolated genus with no obvious affinities. Inter-generic hybrid with *Pipra* recorded (Parkes 1961), but significance of this in assessing relationship vis-à-vis other genera impossible to judge.
Machaeropterus	Includes *Allocotopterus* (see above). This and the following genera constitute the "typical" or specialised manakins, with pronounced sexual dimorphism and (where anything is known of behaviour) elaborate courtship displays.
Manacus	Thickened shafts of secondaries and choice of display perches (vertical saplings near ground) suggest affinity between *Manacus* and *Machaeropterus*.
Corapipo	Black and white male plumage with prominent white throat, display perches near ground, and mechanical wing noises, suggest affinity with *Manacus*.
Ilicura	A genus without obvious affinities.

Masius	A genus without obvious affinities.
Chiroxiphia	Probably closest to *Pipra*, as suggested by common display elements.
Pipra	With *Manacus* and *Chiroxiphia* the most widespread and successful manakin group, far exceeding in diversity of species and so given the culminating place in the sequence.

SPECIES AND SUPERSPECIES

The main problem for classification at the species level is the one encountered in any attempt to decide species limits in tropical continental avifaunas, namely the numerous cases in which closely related forms replace one another in adjacent areas, little or nothing being known of the degree of their relationship or of the interactions, behavioural and ecological, that occur at the borderline. The problem has already been discussed with reference to the Cotingidae (Snow 1973); here it need only be said that when two or more closely related forms of manakins replace one another sharply at the borders of their ranges, with no sign of intergradation, it is intended to treat them as separate species. In nearly all such cases the most obvious differences between the two forms are in the plumage of the males, which is presumably used in display; this suggests that some degree of reproductive isolation exists. The presumption is that each form is preventing the other from penetrating its range through behavioural or ecological incompatibility. It must be recognised that the decision to treat such forms as separate species rather than as subspecies is sometimes arbitrary, especially when the details of distribution are not well known. Subspecies would be expected to intergrade resulting in clinal variation. Good species, on the other hand might be expected to be ecologically and behaviourally compatible and so to spread into each other's ranges. The fact is, however, that many South American bird populations have reached an intermediate stage of speciation.

Once the decision has been made to give specific status to distinct but closely related forms that replace one another geographically, species limits in the Pipridae can in most cases be readily determined. Groups of closely related allopatric species can be treated as superspecies (a term useful in geographical and evolutionary analysis, but without formal nomenclatural status). The following list deals with all such cases in the Pipridae.

Schiffornis

S. virescens and *S. turdinus* form a superspecies, the former replacing the latter in southeast Brazil and neighbouring areas of Paraguay. Where the ranges of the two species approach one another, in Baía, Minas Gerais and Espirito Santo, *virescens* inhabits montane and *turdinus* lowland forest. A very similar situation obtains for other species pairs that consist of a widespread Amazonian species and one with a restricted range in southeast Brazil (e.g. *Lipaugus vociferans* and *L. lanioides*). It is not known whether their ranges are kept separate by active exclusion of each from the range of the other, or whether different habitat and altitude preferences simply prevent them from coming into contact.

Piprites

P. chloris and *P. griseiceps* form a superspecies. *P. chloris* and *P. pileatus* may be sympatric in southeast Brazil; their known ranges approach one another closely, but they have not been collected at exactly the same place. In any case *P. pileatus* is so distinct from the other two that it cannot be considered a member of the same superspecies.

Chloropipo

C. flavicapilla C. holochlora and *C. uniformis* form a superspecies. *C. unicolor* is very distinct (see p. 23) and its range, though poorly known, apparently lies within that of *C. holochlora*. Clearly it cannot be included in the same superspecies.

Tyranneutes

T. virescens and *T. stolzmanni*, the only members of the genus, form a superspecies.

Neopelma

Though the situation in central Brazil needs clarification, it seems that the four species (*chrysocephalum*, *sulphureiventer*, *pallescens* and *aurifrons*) replace one another geographically and form a superspecies.

Heterocercus

The three species (*flavivertex*, *linteatus* and *aurantiivertex*) replace one another geographically and form a superspecies.

Machseropterus

M. regulus and *M. pyrocephalus* apparently replace one another geographically but in a complex fashion which cannot be understood without more locality records. In particular, the situation in northern Peru needs to be examined. Both species have been recorded from Moyobamba, San Martín, but in such mountainous country they may well have been collected at very different altitudes. They almost certainly comprise a superspecies. *M. deliciosus* is much more distinct and, though it is clearly the representative of the group west of the Andes, should probably not be included in the same superspecies.

Manacus

Four species have been recognised (*candei*, *aurantiacus*, *vitellinus* and *manacus*), *manacus* being widespread in South America and the other three having more restricted ranges in Central and extreme north-western South America. The careful analysis by Haffer (1967) has, however, shown that hybridisation occurs in several areas where the ranges of the different forms meet; the courtship displays of *manacus* and *vitellinus* are identical or nearly so. It seems that none of the north-western forms has achieved full specific status. Haffer uses the term "semispecies" to described the situation, but for formal listing in Peters's *Check-list* they will have to be given subspecific status.

Corapipo

C. leucorrhoa and *C. gutturalis*, the only members of the genus, form a superspecies.

Chiroxiphia

The four species (*linearis*, *lanceolata*, *pareola* and *caudata*) replace one another geographically and form a superspecies. *C. caudata*, of eastern Brazil, is less closely related to the others than they are to one another. Where its range abuts on that of *C. pareola* it is found in montane forests and *pareola* in the lowlands, a situation similar to that in *Schiffornis* (*q.v.*).

Pipra

Haffer (1970) has fully discussed the three superspecies into which 15 of the 16 species may be grouped. His treatment will be followed in Peters's *Check-list* and need not be repeated here. The red- and orange-capped forms comprise one superspecies, the blue- and opalescent-capped forms another superspecies, and the orange-headed forms with white in wings and tail

(including *P. filicauda*, formerly placed in the genus *Teleonema*) a third superspecies. These three groups embrace all the species of Pipra except for the white-capped *P. pipra* which has no close relative.

SUMMARY

The classification of the manakins Pipridae is discussed at the generic and specific levels, primarily to explain the treatment to be adopted in the forthcoming Vol. 8 of Peters's *Check-list of birds of the world*. In all the polytypic genera, closely related but distinct forms replace one another geographically usually with no evidence of intergradation. Such forms will be treated as species, a procedure that is recognised as somewhat arbitrary. The paper ends with a list and brief discussion of the 12 superspecies (groups of closely related, allopatric species) which may be recognised in the family.

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Notes on the nesting of the White-cheeked Touraco *Turacus lencotis*

by I. Foxall and P. J. K. Burton

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The captive breeding of the White-cheeked Touraco (*Tauraco leucotis*) has been described by Everitt (1965) and the present account of an unsuccessful nesting in captivity gives additional information on behaviour and includes detailed descriptions of the nestlings.

BEHAVIOUR

The breeding pair were purchased as adults early in 1974, and were liberated into an aviary with attached shelter. This contains two branches for perching and two small holly bushes in the front corners, underplanted with small clumps of ground laurel. A nine-foot high section of a felled Lawson Cypress was erected in the well-lit shelter, and it was in this that the nesting attempts took place. A nesting tray was placed in the cypress, and furnished with some small twigs, but this was completely ignored. The

cypress had been cut some six months before nesting began (in early June), and although still green, its twigs were dry and brittle. Other twigs were supplied, but the nest was almost totally composed of twigs removed from the cypress itself. In contrast to the fragile structure described by Everitt, the nest was a substantial one, approximately eight to nine inches in diameter and four inches thick at the centre. It was of a shallow saucer-like shape, and initially well concealed, situated about seven feet above the ground. Another point of difference from Everitt's observations was that only the male was ever seen building or repairing the nest; the nest used by Everitt's birds was built entirely by the female.

In this breeding pair, the sexes can be distinguished by bill colour, the male's being deeper red, while the female's is distinctly more orange, a difference most marked during the period of attempted breeding. The male's crest is slightly longer and decidely bushier. However, data on specimen labels in the British Museum (Natural History) seem to indicate that bill colour would be unreliable as a general guide.

Mating was never observed, but as early as 30 March the male was seen feeding the female by regurgitation. The usual pattern of behaviour is for the female to fly to a position slightly below the male, and crane her head up and back, whereupon the male invariably responds immediately by feeding her. Vigorous chases were observed a number of times, and the female might well have been injured were it not for the presence of the small clumps of ground laurel, into which she dived when hard pressed, remaining there, crouched motionless, for some considerable time. The male also chased the other occupants of the aviary, a pair of Rothschild's Grackles (*Leucopsar rothschildi*) and a Red-rumped Green Woodpecker (*Picus erythropygius*), until they were removed.

Another male White-cheeked Touraco was introduced into a neighbouring aviary, where he was visible to the breeding male. On one occasion, the latter was seen to approach as close as possible, bow low on the perch, and extend the wings forwards and outwards; whilst holding this position for a few seconds, he emitted a long-drawn out pigeon-like "whooooo". Other calls used include a quick repeated "kek, kek, kek . . ." used as a flight call by both sexes, and a call used only by the male, mainly during the breeding period. This was a protracted and rather variable series of cackles, descending in pitch at the end, thus: "KUK kuk kuk KUK kuk kuk KUK kukukukukuk".

Up to the time of writing (December 1974), five nesting attempts have been made, in early June, mid-July, late August, late September and mid-October. Each time, a clutch of two eggs was laid, off-white in colour and rather coarse textured; one egg measured was 45 mm by 32 mm in size. Both birds shared incubation. Although detailed observations were not made, changes were apparently frequent, roughly hourly during day time. When first seen each day at 0800, the male was always incubating. Part of the change-over ritual was once seen, when the male approached the female carrying a small twig in his bill. He offered this to the female, giving a low chuckling call, and then dropped it, reaching up to break off another which the female then accepted and placed on the nest. During the course of the several breeding attempts, the area immediately around the nest became quite denuded of cover, possibly due to such behaviour.

The two most accurate estimates made indicate a fairly reliable figure of 23 days as the incubation period. Incubation apparently commences with the first egg. For the first three attempts, both birds sat very tight, and only on

two occasions were both observed off the nest. They even allowed a hand to be placed underneath them without moving, though the bill was widely opened in threat. During the last two attempts, both birds seemed more unsettled, and the female was reluctant to incubate, only doing so when chased by the male. The egg shells were very thin on both these occasions, probably due to a dietary deficiency, and one broke in each case, which might have contributed to the bird's unease.

NESTLINGS

One of us (PJKB) recently completed the task of illustrating a wide range of nestlings for forthcoming publications. The experience revealed how very inadequate most descriptions of nestlings actually are. The best available for nestling Musophagidae are those given by Moreau (1938), Van Someren (1956) and Everitt (1965). However, none of these are as detailed as could be wished, and the following notes on *T. leucotis* nestlings may help to remedy this deficiency.

Four nestlings were found soon after death and in good condition, and these are now in the collections of the British Museum (Natural History). Their ages were approximately 8–10 days; 4 days; 3 days; and 1 day. The eldest appears to have been retarded during development, and is little different from the 4 day old one. The following description of the youngest utilises the colour nomenclature of Ridgway (1912):

There is a dense cover of silky neossoptile down, which largely conceals the spaces between the pterylae and varies in length from about 6 to 12 mm. The bill is similar in shape to the adult's, but shallower, and less strongly hooked at the tip. The down is uniformly "fuscous" in colour, very slightly paler below; apart from the bill and legs, the whole appearance strongly recalls the chicks of many rails. There is a small bare area on the lores and around the eye, for which only a small slit is present. This bare skin is "tea green"; the rest of the body skin, where visible, is "shell pink". The bill is "grenadine pink"; the anterior third of the maxilla tip, and the extreme tip and anterior half of the tomium of the mandible are black, and there is a small white egg tooth. The inside of mouth and bill are basically "peach red", the many fine papillae paler, while the more posterior parts of the palate and pharynx are "light brownish vinaceous". The tongue is "pale flesh" shading to "pale salmon" at the base. Tarsi and toes are "light russet-vinaceous", somewhat paler on the posterior surface of the tarsi and the undersides of the toes; the claws are "fuscous".

The older nestlings are similar, but the 4-day old and 8-10 day old individuals have the bill paler, "flesh pink", and also noticeably deeper at the base, with a smaller, rounder nostril.

The nestlings have tiny wing claws, approximately 1 mm long and almost white in colour, on the alula. Dissection of the youngest nestling reveals that the large os uncinatum characteristic of the Musophagidae (see Burton 1970) is already well developed.

References:

Burton, P. J. K. 1970. Some observations on the os uncinatum in the Musophagidae. *Ostrich*, Sup. 8: 7–13.
Everitt, C. 1965. Breeding the White-cheeked Touraco. *Avicult. Mag.* 71(1): 24–27.
Moreau, R. E. 1938. Some aspects of the Musophagidae. *Ibis* 100: 67–112, 238–270.
Ridgway, R. 1912. *Color standards and color nomenclature.* Washington, D.C.: published by the author.
Van Someren, V. G. L. 1956. Blue-crested Plantain Eater. *Fieldiana Zool.* 38: 164–174.

Variation in some characters of three palaearctic *Certhia* species

by C. J. Mead

Received 6th November 1974

The purpose of this paper is to record and discuss some aspects of variation discovered for three species of *Certhia* from specimens available at the British Museum (Natural History) and the Liverpool Museum. All Palearctic specimens of *Certhia brachydactyla*, *C. familiaris* and *C. nipalensis* were measured as follows:—

Wing-length. A stopped mm rule was used to take the maximum chord measurement. The primaries were flattened and straightened and the length recorded to the nearest mm.

Bill-length. The length from tip to skull, measured above the bill using vernier callipers, was recorded to the nearest 0·1 mm.

Claw-length. The distance from the edge of the scale above the hind-claw to the claw's tip was recorded to 0·1 mm using the vernier callipers.

In addition the British Museum specimens also had the bill-width, measured just behind the nostrils, and the degree of (or lack of) a pale margin on the distal edge of the largest feather of the alula recorded. The scoring for this last character was as follows:

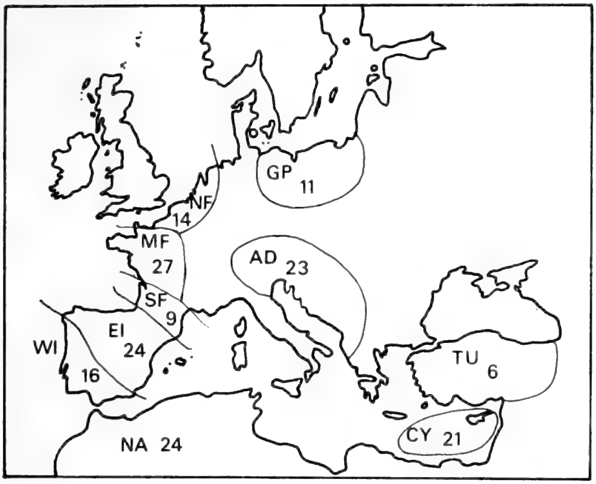
+3 Very distinct margin	—3 Very distinct break in margin
+2 Distinct margin	—2 Distinct break in margin
+1 Indistinct margin	—1 Indistinct break in margin

0 Impossible to decide whether the margin was continuous or not.

All the measurements were taken by CJM and immediately recorded, with details from the label, by B. R. Watmough, who was also responsible for scoring the alula feather. Although the birds were examined over a period of about nine weeks checks did not reveal any systematic bias within or between measuring sessions. Check measurements taken by BRW also generally agreed closely with CJM's. Skins with broken, missing or mis-shapen bills or claws only had measurements recorded for those parts which appeared normal. Very long (or short) bills and claws which appeared to be normal in shape are included in the figures. Since retraps of live birds caught for ringing have shown that juveniles continue to grow both bill and claw for several weeks after fledging particular attention was paid to specimens from late summer and early autumn. Measurements are not included in the main figures of birds labelled as juveniles, of birds still showing growth of wing feathers or of birds which retained the typically soft and fluffy under-tail coverts of juvenile plumage.

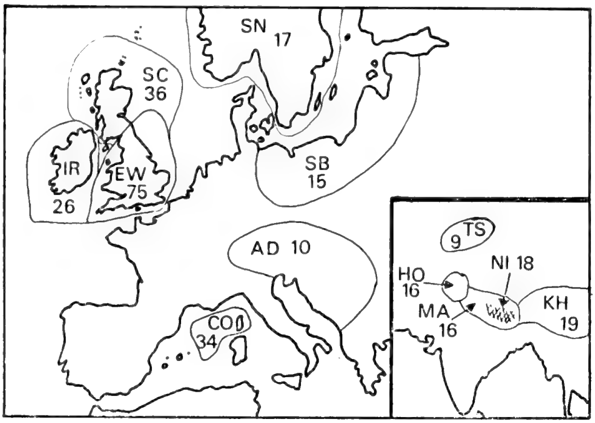
This investigation was prompted by reports that *Certhia brachydactyla* may be present in southern England. It seemed of crucial importance, for the assessment of these reports, that as large as possible a series of measurements of both species should be available. This aspect of identification will be dealt with elsewhere and the problems of comparing measurements of live birds with museum specimens and of measurements taken by different people will

Figures I and II identify the areas and the numbers of specimens available for *Certhia brachydactyla* and *C. familiaris* (and *nipalensis*) respectively. The two letter codes are interpreted beside each map.



NA: North Africa
WI: West Iberia
EI: East Iberia
SF: Southern France
MF: Mid France
NF: Northern France
GP: Germany and Poland
AD: Adriatic
CY: Cyprus
TU: Turkey

IR: Ireland
SC: Scotland
EW: England and Wales
SN: Sweden and Norway
SB: Southern Baltic
AD: Adriatic
CO: Corsica
HO: *hodgsoni*
MA: *mandellii*
NI: *nipalensis*
KH: *khamensis*
TS: *tianschanica*
(JA: *japonica*—not shown)



then also prove relevant. For the purpose of the present survey, however, specimens were identified by considering a combination of—

a) the locality of collection;
b) the identification on the label; and
c) comparison with the wide range of other skins available.

The specimens were divided, by area of origin, within Europe, north Africa and Asia Minor. The Asiatic specimens of *familiaris* were categorised by race (*japonica* from Japan and *tianschanica* from Tian Shan correspond with definite geographical areas), except that *Certhia nipalensis* is treated as a monotypic species. Only categories containing five or more specimens *in toto* have been considered. The two maps, Figures I and II, for *brachydactyla* and *familiaris* respectively, show the areas covered by and the number of specimens available for each category. The code letters, explained in the captions, correspond to those used in the other Figures to identify the categories.

Figure III: wing, bill and claw lengths (mm) and sample sizes of *Certhia* specimens from the areas shown in Figs. I and II. Large dot shows mean, small dots two standard errors each side and the line extends one standard deviation above and below the mean. All specimens from each area are included (*cf*. Figs. IV and V for sexed skins).

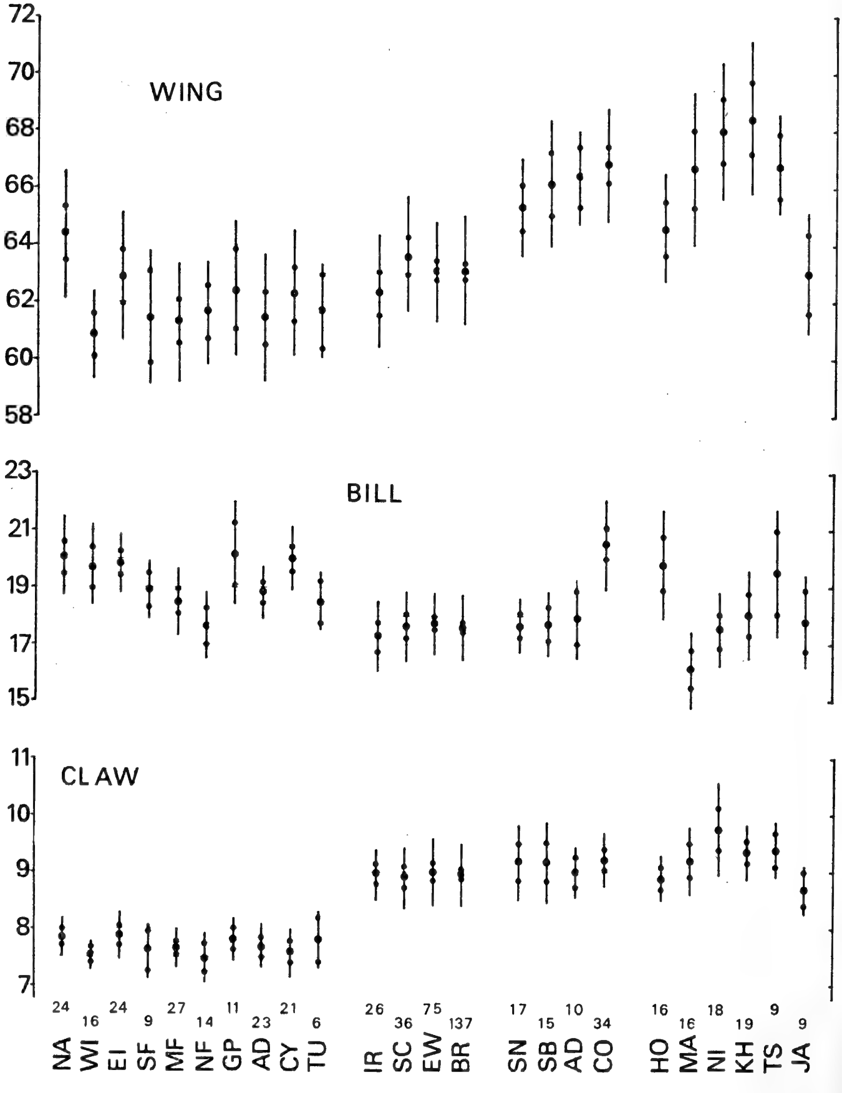


Figure IV: wing, bill and claw lengths (mm) and sample sizes of *Certhia* specimens sexed as ♂♂ from the areas shown in Figs I and II. Samples of five or more shown like those on Fig. III, otherwise large dots show means for samples of two to four and small dots single sexed skins.

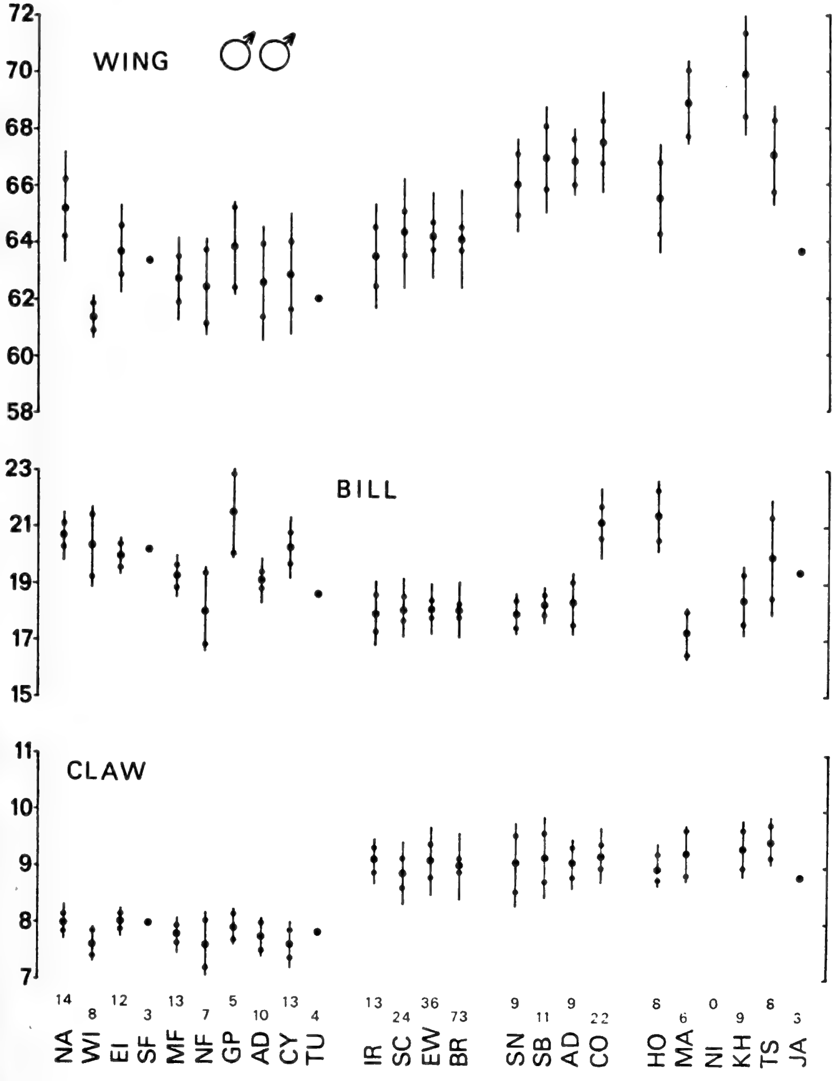
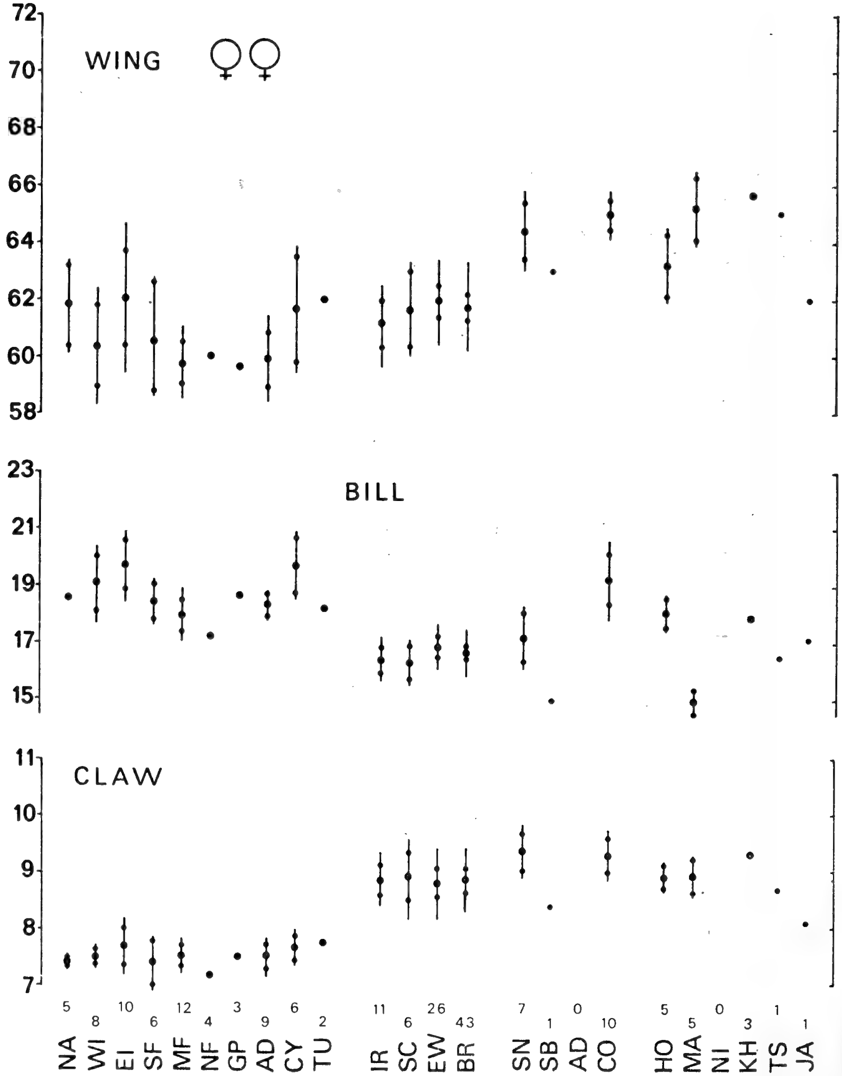


Figure V: wing, bill and claw lengths (mm) and sample sizes of *Certhia* specimens sexed as ♀♀ from the areas shown in Figs. I and II. Samples of five or more shown like those on Fig. III, otherwise large dots show means for samples of two to four and small dots single sexed skins.



Figures III, IV and V summarise the measurements of wing, bill and claw length for all the specimens, for males and for females respectively. The figures above the area/racial code letters indicate the size of the sample available for wing-length measurement (bill and claw samples may be smaller).

Figure VI shows, below, the bill-width and, above, the percentage of each population (with sample size) showing different scores for the largest alula feather. In Figures III-IV the ten left-hand columns all refer to *brachydactyla*, then come four columns for *familiaris* in Britain and four in Europe, and the six right-hand columns refer to the Asiatic *familiaris/nipalensis* populations.

In figure VII the mean measurements of males are expressed as a percentage of the mean for females. The line extending from the dot, marking the mean, towards zero covers the 95% confidence limit for this statistic using Student's t-test. The sample sizes are given for each sex—a broken bill on a female *brachydactyla* from north Africa accounts for the lack of an NA entry under "bill".

Figure VI: below, bill-width (mm), just behind the nostrils (mean, two standard errors and standard deviation as in Fig. III); above, the percentages of the different scores on the alula margin. Double solid dots indicate birds with distinct breaks in the margin, single solid dots an indistinct break, single open dots an indistinct margin, double open dots distinct margins and the crossed section indeterminate birds. The figures below the plots show the sample sizes in each case.

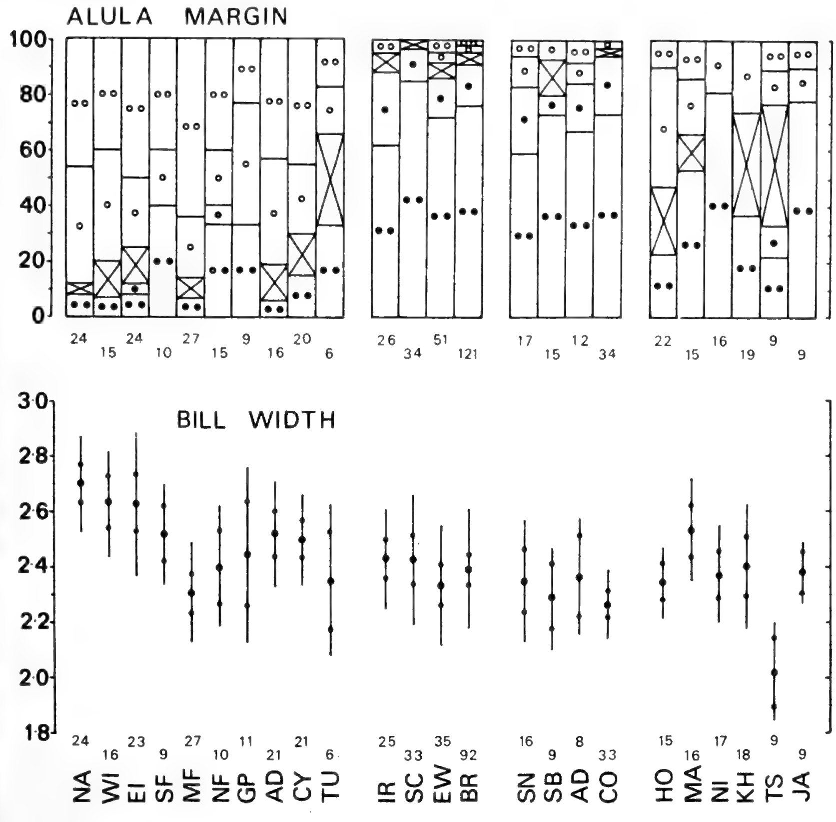
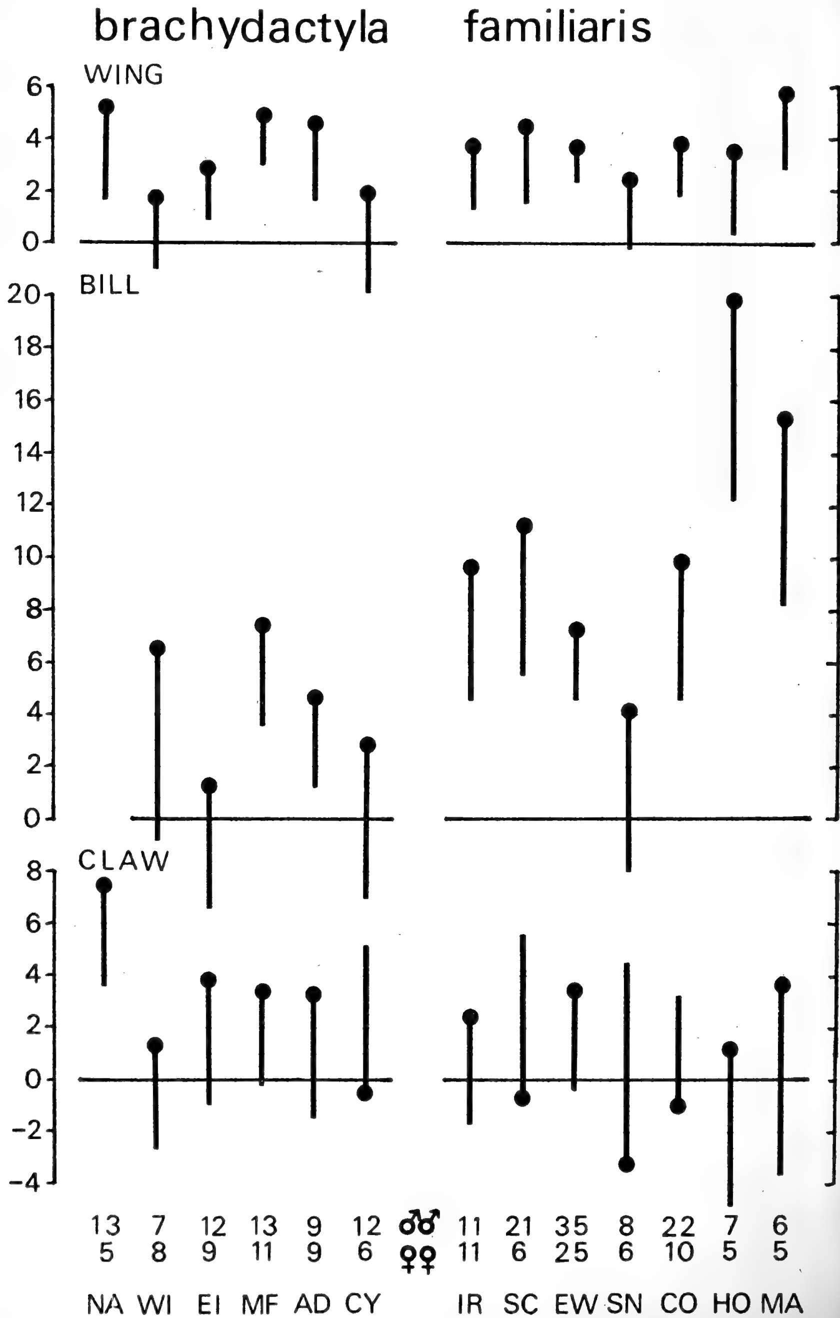


Figure VII: the percentage of sexual dimorphism in wing, bill and claw length for those populations of *Certhia brachydactyla* and *C. familiaris* with at least five specimens of each sex available. The position of the dot shows the percentage by which male mean measurements exceed (or are less than) female means and the solid line shows the 95% confidence limit (extending towards zero). Maximum samples available for each sex are shown above the code letters identifying the area of origin of the specimens.



DISCUSSION

As will be seen from the sample sizes given in Figs. III, IV and V varying numbers of the specimens were unsexed and sexed: the sex ratios varied from 9♂♂: no♀♀ to 3♂♂: 6♀♀. This could affect the overall mean for a category and it would have been most satisfactoy to have considered variation amongst males only but too few specimens were available. However, comparison of the three Figures will show that the relationships implied by sexed specimens are, in general, confirmed by the overall means. The comments which follow, on the three main measurements, cover Figs. III, IV and V taken together.

Wing-length

The longest-winged *brachydactyla* population is in north Africa but otherwise there is little variation within this species apart from the difference between WI and EI (significant with $P<0 \cdot 01$: the test used here, and for later comparisons, is Student's t-test—in this case $t = 3 \cdot 0745$ with 38 d.f.). The wings of British *familiaris* are shorter than any other populations of the species apart from the Japanese. Within Europe the wing-length increases gradually from Scandinavia south to the Adriatic. The longest winged European birds come from Corsica. The four Himalayan populations increase in wing-length from west to east—the *C. nipalensis* specimens conform to this increase. The isolated race from Tian Shan is similar to the other four mainland Asiatic populations but Japanese birds are as small as British ones.

Bill-length

The bills of *brachydactyla* populations decrease steadily from North Africa to northern France. German and Polish birds are similar to the most southerly populations, but some males from this area are undoubtedly longer-billed than other populations of the species. The Cypriot population is longer-billed than either of the other two samples from the south-east. British and mainland European populations of *familiaris* have very similar bill-lengths which differ very little from *brachydactyla* from northern France. Corsican and *f. hodgsoni* populations have long bills, not much different from the longest *brachydactyla* samples. The three other Himalyan populations gradually increase in bill-length from west to east. The isolated population in Tian Shan has a long bill, similar to *f. hodgsoni* which is the nearest race to it. The far eastern population, from Japan, is similar to European populations.

Claw-length

There is little variation in claw length-within *brachydactyla* or European *familiaris* populations. Within Asia two popualtions have shorter claws, *f. hodgsoni* ($P = c. 0 \cdot 1$) and Japanese birds ($P = c. 0 \cdot 05$), and one longer, *nipalensis* ($P = c. 0 \cdot 01$), compared with the overall European mean of $9 \cdot 0488$.

Bill-width

Figure VI (lower part) shows bill-widths. For *brachydactyla* and European *familiaris* populations the relationships very closely reflect those shown by bill-length. The only exceptions are the two island forms, in particular the Corsican birds, which have longer bills than other European *familiaris*, but also have very much thinner bills ($P<0 \cdot 001$). In Asia *f. mandellii* has a thicker bill ($P<0 \cdot 01$) and the birds from Tian Shan much thinner bills ($P<0 \cdot 001$) than the European mean.

Alula margin

Since Harrison (1935) had pointed out that the pale margin (or lack of it) on the distal web of the largest feather of the alula could be useful in speciating European treecreepers this character was scored for the British Museum specimens. The results are shown in the upper part of Fig. VI. It is immediately apparent that this character is helpful in most populations but, apart from the Scottish birds, there were some in each population showing the "wrong" feature. Out of a total of 166 *brachydactyla* 124 had margins (75%), 15 were ambiguous (9%) and 27 lacked margins (16%). European *familiaris* fared better with 178 out of 203 (88%) not showing margins, nine indeterminate (4%) and 16 with margins (8%). Populations from Asia of *familiaris* were worst with 30% showing margins. Three specimens of *nipalensis* had margins, 13 did not.

Sexual dimorphism

Figure VII shows the percentage difference by which the mean for males exceeds the mean for females (with 95% confidence limit) for all populations for which there were five or more specimens of each sex available. All showed similar values for wing-length but most *familiaris* populations, particularly the two from Asia, showed a greater than expected excess of male bill-length over female. Dimorphism in claw-length was generally less than for wing-length and, in four instances, male claws actually averaged less than female's. Only in the sample of *brachydactyla* from north Africa did male claws exceed the female by a significant amount ($P=c.0 \cdot 001$). The different degrees of sexual dimorphism might suggest some adaptive significance—apart from wing-length where the differences are quite normal for a passerine species. The high values for bill-length may indicate different feeding patterns between the sexes or, possibly, a male role in the breeding cycle which benefits from a particularly long bill. The lack of clear distinction, in all but one population, for claw-length may indicate that there is an optimum claw-length in each area—possibly a function of the bark characteristics of the trees of the region concerned.

Racial and specific differences

The differences between *brachydactyla* and *familiaris*, on measurements, will be discussed elsewhere. The latest revision of the two main species was by Vaurie (1957). The subspecies he recognises are probably represented by the populations I have measured, as follows:

Certhia brachydactyla:
brachydactyla WI, EI, SF, MF, GP, *AD*.
megarhyncha WI, EI, SF, MF, *NF*, GP.
mauritanica NA.
dorotheae CY.
harterti TU.

Certhia familiaris:
familiaris SN, SB.
japonica JA.
khamensis KH.
mandellii MA.
hodgsoni HO.
macrodactyla SB, *AD*.
britannica IR, *SC*, *EW*, *BR*.
corsa CO.
tianschanica TS.

Categories entered in italics can thus be exclusively referred to one subspecies but others may be from an area of overlap. On the particular characters investigated in this paper the variation within *brachydactyla* appears to be gradual apart from the difference in wing-length between the two Iberian categories and the jump in bill-length between NF and GP—the former

should all be *megarhyncha* and the latter probably include some of that race. Cyprus birds (*dorotheae*) have a much longer bill than their nearest neighbours. Within European *familiaris*, *britannica* is short winged, *corsa* is long and thin billed (presumably for feeding in Corsican pines) but *macrodactyla* appears to differ little from nominate *familiaris*. Within Asia several populations contain more than the European proportion of birds with margins to their largest alula feather. The westerly race, *hodgsoni* is long-billed and short-winged and its neighbouring isolated race, *tianschanica*, has a very thin bill. The increase in measurements from west to east along the Himalayas is present in all four measurements with only three exceptions: *hodgsoni* has a long bill (already mentioned), *nipalensis* a long claw (see below) and *mandellii* a wide bill (otherwise very little difference in bill-width). The isolated most easterly race *japonica* is similar in size to *britannica* but has a shorter claw. The monotypic species *nipalensis* does not differ greatly in these characters from neighbouring *familiaris* races although its claw-length is greater ($P<0 \cdot 05$ for *mandellii*, $P<0 \cdot 1$ for *khamensis*). This species is considered to be a race of *familiaris* by Dementiev & Gladkov (1954) and I feel that further investigation may show this to be the case.

ACKNOWLEDGEMENTS

I should like to thank Dr. D. W. Snow and Mr. P. J. Morgan for permission to examine the specimens in their care at the British Museum (Natural History) and Liverpool Museum respectively. Dr. J. J. M. Flegg, D. I. Sales and D. I. M. Wallace have offered encouragement and advice and B. R. Watmough not only helped with the recording of the data from the skins but also started the time-consuming task of organising and calculating the statistics from the data which had been recorded.

References:

Dementiev, G. P. & Gladkov, N. A. (Eds.) 1954. *Birds of the Soviet Union*, Vol. 5: Moscow; as translated by Israel Program for Scientific Translations, Jerusalem.

Harrison, J. M. 1935. A note on *Certhia familiaris* and *C. brachydactyla*. *Ibis*, 77: 437–438.

Vaurie, C. 1957. Systematic Notes on Palearctic Birds. No. 30 The Certhiidae. *Amer. Mus. Novitates*, 1855: 1–14.

IN BRIEF

(a) Food of Giant Snipe *Gallinago undulata*

With further reference to my paper on this species (*Bull. B.O.C.* 94(4): 132-4), I am indebted to Dr. J. C. Lindeman of the Botanical Museum and Herbarium of the University of Utrecht for identifying the food contained in the gizzards of the specimens collected. It comprised solely a dense mass of vegetable matter consisting of grasses and Cyperaceae which could not be indentified. Only a few fruits of *Fimbristylis dichotoma*, that grows in savannas, could be recognised.

4 December 1974 G. Haverschmidt

(b) Goliath heron *Ardea goliath* in the Sunderbans, W. Bengal

As the most recent record of the occurrence on the Indian sub-continent of this essentially African species (Salim Ali and S. Dillon Ripley, Handbook of the Birds of India and Pakistan, Vol. 1, 1968) is of one shot in the Khulna

Sunderbans, now in Bangladesh, in December 1925, it may be of interest that I observed another example of the species not many miles away, in the Indian sector of the Sunderbans, on 22 March 1974. The bird was quite unmistakable as it flew past the Forest Department's launch 'Banashree'. I suspect that the Goliath Heron is regularly to be found in the area and that the lack of reports is solely due to the absence of ornithologists.

2 January 1975 P. F. R. Jackson

(c) Grey-headed lapwing *Vanellus cinereus* in Brunei and Sarawak

On 28 November 1974, a large plover was found in a field near the Seria to Kuala Belait road in north-western Brunei; it remained on the same piece of ground for six days. Careful notes were taken of all distinctive features and sent with a coloured sketch to Dr. D. Wells of the University of Malaya, who confirmed the identification of the bird as above. Subsequently, on 18 January 1975, a Grey-headed lapwing, very possibly the same individual, was sighted at Miri, Sarawak, about 65 km to the south-west of Seria by Mr. P. Alexander-Marrack. Previous records of the species in Malaysia appear to be confined to one in Malaya in the 1950s; there is also a single record from Luzon in the Philippines. The present occurrences therefore constitute a considerable deviation from normal range, perhaps connected with the heavy storms prevalent at the time.

28 January 1975 A. P. Smith

Bulletin of Zoological Nomenclature: Opinions

In continuation of *Bull. Brit. Orn. Cl.* 94, 1974: 128, and by permission of the International Trust for Zoological Nomenclature, the following Ruling is quoted as an extract from an Opinion published in *Bull. Zool. Nomencl.* affecting birds:

OPINION 1011

(*Bull. Zool. Nomencl.* 30 (3/4), 1974: 167)

Cypselus abessynicus Streubel, 1848 (Aves, Apodidae): suppressed under the plenary powers

(1) Under the plenary powers the specific name *abessynicus* Streubel, 1848, as published in the binomen *Cypselus abessynicus*, is hereby suppressed for the purposes of the Law of Priority but not for those of the Law of Homonymy.

(2) The specific name *galilejensis* Antinori, 1855, as published in the binomen *Cypselus galilejensis* is hereby placed on the Official List of Specific Names in Zoology with the Name Number 2518.

(3) The specific name *abessynicus* Streubel, 1848, as published in the binomen *Cypselus abessynicus* is hereby placed on the Official Index of Rejected and Invalid Names in Zoology with the Name Number 989.

Committee

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C. J. Mead

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Contributions, whether by Club Members or by non-members, should be sent to the Editor, Sir Hugh Elliott, 173 Woodstock Road, Oxford, and are acceptable on condition that they have been offered in the first instance solely for publication in the *Bulletin*. They should be typed on one side of the paper, with double-spacing, and a wide margin, and submitted in duplicate.

Scientific nomenclature, style and lay-out both in general and especially of References to literature, should conform with usage in this or recent issues of the *Bulletin*, unless a departure is explained and justified. Photographic illustrations can at present only be accepted if the contributor confirms willingness to pay for their reproduction.

An author wishing to introduce a new name or describe a new form should append *nom.*, *sp.* or *subsp. nov.*, as appropriate, and set out the supporting evidence under the standard headings "Description", "Distribution", "Type", "Measurements of Type", and "Material examined", plus any others needed.

A contributor is entitled to receive 16 free reprints of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Any additional reprints required or reprints of contributions of less than one page should be ordered when the manuscript is submitted and will be charged for at cost price.

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MEMBERSHIP

Only Members of the British Ornithologists' Union are eligible to join the Club: applications should be sent to the Hon. Treasurer, M. St. J. Sugg, 5 The Limes, Hitchin, Herts. SG5 2AY, together with the current year's subscription (£3·50). The remittance and all other payments to the Club should always be in *sterling* unless an addition is made to cover bank charges for exchange, etc. Payment of subscription entitles a Member to receive all *Bulletins* for the year. Changes of address and revised bankers' orders or covenants (and any other correspondence concerning Membership) should be sent to the Hon. Treasurer as promptly as possible.

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CORRESPONDENCE

Correspondence about Club meetings and other matters not mentioned above should go to the Hon. Secretary, R. E. F. Peal, 24 Creighton Avenue, London N10 1NU.

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Bulletin of the

British Ornithologists' Club

Edited by

HUGH F. I. ELLIOTT

Volume 95 No. 2 June 1975

Annual General Meeting

The eighty-third Annual General Meeting of the British Ornithologists' Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 20th May 1975 at 6 p.m. with Prof. J. H. Elgood, M.A., in the chair. Twelve members were present.

The minutes of the eighty-second Annual General Meeting (*Bull. Brit. Orn. Cl.* 94: 41–42, 129) and of the Special General Meeting held on 19th November 1974 (*Bull. Brit. Orn. Cl.* 94: 132) were approved and signed.

The Chairman presented the Report of the Committee for 1974 and the Hon. Treasurer presented the Accounts for 1974. The Hon. Treasurer explained that the amount of income tax recovered was about double that which would normally be received, as in 1974 the sums due in respect of two years had been received. Subscriptions received in 1974 included substantial amounts in respect of previous years and the sales of back-numbers of the *Bulletin* were abnormally large. The surplus on the year of £434 was, unfortunately, attributable solely to these exceptional factors.

The Editor reported that the supply of good papers from all parts of the world had been keeping up well. The time from receipt of a paper to publication was currently three to six months.

On the proposal of the Chairman, the Report and Accounts were received and adopted unanimously.

The Chairman thanked Sir Hugh Elliott for his services as Editor and for handling the stock and sales of back-numbers of the *Bulletin*

There being no nominations additional to those of the Committee, the following were declared elected:—

Editor: Dr. J. F. Monk, D.M. (*vice* Sir Hugh Elliott, from whom he will take over at the end of the year).

Hon. Secretary: Mr. R. E. F. Peal (re-elected).

Hon. Treasurer: Mr. M. St. J. Sugg (re-elected).

Committee: Mrs. J. D. Bradley and Mr. C. E. Wheeler (*vice* Mr. C. J. Mead and Lieut. Col. J. R. Neighbour).

The following resolutions to amend the Clubs' Rules, proposed by the Committee as special resolutions, were considered and were passed unanimously:—

Resolution 1

That Rule (4) be hereby amended by the deletion of the first two sentences and the substitution in place thereof of the following sentences:—

Any member of the British Ornithologists' Union may become a member of the Club on payment to the Treasurer of the annual subscription. The first subscription of a Member who joins in October, November or December shall cover his membership until 31st December in the following year. The rate of subscription for Members shall be decided by the Committee. A member who ceases to be a member of the British Ornithologists' Union shall also cease to be a member of the Club unless the Committee shall consider it is in the interests of the Club to permit him to remain a Member of the Club.

Resolution 2

That Rule (10) be hereby amended by the deletion of the words:—

as soon as possible after each Meeting.

Resolution 3

That Rule (12) be hereby deleted and in place thereof the following Rule be hereby adopted:—

(12) **Subject to the terms of any bequest or gift, any stocks, shares, other securities, money or other property (whether real or personal) from time to time belonging to the Club may be vested in trustees for the Club if the Club shall by a special resolution so decide. Such special resolution shall appoint Trustees and shall specify the trusts under which the property is to be held.**

The meeting closed at 6.25 p.m.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 95 No. 2 Published: 20 June, 1975

The six hundred and ninety-third meeting of the Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 18th March 1975 at 7 p.m.

Chairman: Prof. J. H. Elgood, M.A., present 23 members and 10 guests.

Dr. D. W. Snow gave an address of much interest on the preparation of the atlas of African non-passerines and showed slides of maps of special importance.

The six hundred and ninety-fourth meeting of the Club was held at the Cafe Royal, 68 Regent Street, London, W.1, on Tuesday 20th May 1975, at 7 p.m.

Chairman: Prof. J. H. Elgood; present 22 members and 20 guests.

The subject for the evening was the Australasian Region. Sir Landsborough Thomson opened with a summary of his impressions of the regional avifauna, and especially that of New Zealand, obtained on trips before and after the 1974 I.O.C. Dr. C. M. Perrins followed, dealing in some detail with birds and habitats, mainly of northern and central Australia, and the Chairman, Professor Elgood, concluded with an account of bird haunts and species he had recently seen around Port Moresby and elsewhere in Papua New Guinea and neighbouring islands. All the talks were illustrated by slides and led up to a general discussion.

Forthcoming Meetings:

Tuesday, 15th July 1975, Senior Common Room, South Side, Imperial College, South Kensington; entrance–south side of Prince's Gardens, S.W.7 (off Exhibition Road and N. of Victoria & Albert Museum) 7.00 p.m.: R. S. R. Fitter on "The work of the Survival Service Commission and the problem of extinction". Buffet supper, cost £2.40 (including service and V.A.T).; cheques should if possible be sent to the Hon. Secretary before the meeting, failing which they should be given to the Hon. Treasurer on arrival at the meeting.

Tuesday, 16th September, Café Royal, 6.30 p.m. for 7 p.m.: Lord Medway on "The Ornithology of the New Hebrides"

Tuesday, 18th November, Café Royal, 6.30 p.m. for 7 p.m.: Patrick J. Sellar on "An Ornithological selection from the new British Library of Wildlife Sounds" illustrated by tape recordings.

An unrecorded specimen of *Collocalia papuensis* Rand

by S. Somadikarta

Received 30th October, 1974

The Three-toed Swiftlet, *Collocalia papuensis* Rand, is presently known from 13 specimens of which details have been published (some additional material is reported to be under study: see Schodde 1973—Ed.). These birds were collected from Hollandia (now Jayapura) and Idenburg River area, between sea level and 1800 m altitude, in the western part of New Guinea (Rand 1941, Somadikarta 1967).

(*continued on page 44*)

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st DECEMBER, 1974

1973 £	1973 £	EXPENDITURE	£·p	£·p
		Bulletin:		
	1,212	Cost of Publication, Distribution, Index, etc.	1,434·10	
	339	*Less:* Sales	511·48	
873				922·62
68		Notices, etc. for Meetings		54·52
22		Audit Fee		22·00
43		Lecture Expenses		71·69
78		Miscellaneous Expenditure and Postage		141·56
10		Projector depreciation		10·00
£1,094				£1,222·39
490		Balance, excess of Expenditure over Income brought down		289·17
—		Transfer to General Fund		434·91
£490				£724·08

1973 £	1973 £	INCOME	£·p	£·p
		SUBSCRIPTIONS:		
441		Members and Associates		693·21
—		Income Tax recovered under Deeds of Covenant		122·64
		INVESTMENT AND DEPOSIT INCOME:		
	54	General Fund	68·39	
	49	Trust Fund	48·98	
103				117·37
60		Donation		—
490		Balance, excess of Expenditure over Income carried down		289·17
£1,094				£1,222·39
119		Transfer to General Fund		—
186		Sales of *Bulletin* for previous years ..		477·58
185		Rent less Expenses—property at Clovelly		246·50
£490				£724·08

Note: No allowance has been made for subscriptions received in 1974 for future years.

BALANCE SHEET, 31st DECEMBER 1974

1973 £	£		£·p	£·p
		GENERAL FUND		
	962	As at 31st December, 1973	842·84	
843	(119)	*Add:* Transfer from Income and Expenditure Account	434·91	
				1,277·75
		BULLETIN FUND		
110		Donations from Members		110·15
55		CREDITOR		55·00
1,008				1,442·90
		TRUST FUND (The Capital of this Fund may not be used—the Income from it is General Revenue)		
1,000		F. J. F. Barrington Legacy		1,000·00
£2,008				£2,442·90

1973 £	£		£·p	£·p
		GENERAL FUND, INVESTMENT		
	100	£100 $8\frac{1}{2}$% Treasury Loan 1980/82 at cost	100·00	
80	20	*Less:* Reserve	20·00	
		(£80) Market Value £73		80·00
		PROJECTOR AND SCREEN		
	100	Addition at Cost	100·00	
70	30	*Less:* Depreciation	40·00	
				60·00
1		STOCK OF *Bulletin*—Nominal Value No value has been included for the stock of the Scientific Index ..		1·00
198		DEBTORS		—
	41	CASH AT BANK—Current Account ..	621·03	
	618	—Deposit Account ..	680·87	
659				1,301·90
£1,008				1,442·90
		TRUST FUND, INVESTMENT		
1,000		£1,399·55 $3\frac{1}{2}$% War Stock		1,000·00
		(£406) Market Value £287		
£2,008				£2,442·90

J. H. ELGOOD, *Chairman*

M. ST. J. SUGG, *Hon. Treasurer*

We have prepared the above Balance Sheet and annexed Income and Expenditure Acocunt from the books and records of the Club and certify them to be in accordance therewith.

KNIGHTWAY HOUSE,
20 SOHO SQUARE, London, W1V 6QJ.

7th April, 1975

NORTON KEEN & CO.,
Chartered Accountants.

In the collection of the Museo Civico di Storia Naturale "Giacomo Doria" (MSNG), Genoa, Italy, I have found another unrecorded specimen of *C. papuensis* (MSNG 26535 – Cat. 76E). It is labelled "L. Loria – Viaggio di Lamberto Loria – Nuova Guinea Brittanica" and erroneously identified as *C. fuciphaga* (Thunberg). Salvadori (1896) stated that more than 37 other skins out of 173 specimens collected from 27 May to 12 September 1891 in the eastern part of New Guinea were also improperly labelled. He designated each of these specimens as "esemplare senza indicazioni", or "esemplare senza cartellino".

Birds collected by Loria seem always to have been carefully labelled, which suggests that this solitary *C. papuensis* specimen was neither collected nor examined by him. Salvadori (1896) reported that from 1891 to 1893, Loria was accompanied by Amadeo Giulianetti, who therefore may have been responsible for the inadequately labelled specimens.

The only two specimens of swiftlets obtained by Loria from the eastern part of New Guinea were identified by Salvadori (1891, 1896) as *C. fuciphaga* and *C. esculenta*, respectively. He apparently overlooked the existence of a *C. papuensis* in the collection, as no account appeared in his publications (Salvadori 1890, 1891, 1896).

I have examined Salvadori's "*C. fuciphaga*" specimen (MSNG 26534 – Cat. 76D). It is a female, collected by L. Loria (field no. 967) from Igibirei (Kemp Weltch) on 6 August 1890. This swiftlet has four toes, unfeathered tarsus and throat lighter than abdomen. The measurements (in mm) are: wing 107·5, central tail feathers 39·0, outer tail feathers 46·0, exposed culmen 4·0, and tarsus 10·0. Based on these data, I prefer to consider this swiftlet as a member of one of the *C. vanikorensis* (unrecognized) population. I could not locate the *C. esculenta* specimen in the MSNG collection.

The measurements (in mm) of the unrecorded, mistakenly identified Three-toed Swiftlet are as follows: wing 120·5, central tail feathers 46·0, outer tail feathers 50·5, exposed culmen 5·5, and tarsus 12·0. The tarsus is densely feathered, the throat clearly silvery grey. The 6th and the 7th primaries of the bird were in moult, the total primary score is 66 (*see* Newton 1966, Somadikarta 1968). The moult data of this specimen suggest that the bird was collected between March and June (*see* Somadikarta 1967). From the end of May to the end of June 1891, Giulianetti was collecting in Kapa-Kapa, a village on the seashore about 30 miles east of Port Moresby (*see* Salvadori 1896). Accordingly, I conclude that this Three-toed Swiftlet specimen was collected from Kapa-Kapa, between the end of May and the end of June 1891, during Loria's trip in the eastern part of New Guinea.

I have examined most of the swiftlet specimens from New Guinea in major museums in the United States and in Europe. To the best of my knowledge, the specimen MSNG 26535 – Cat. 76E is the first specimen of *C. papuensis* Rand ever collected.

ACKNOWLEDGMENTS

I am grateful to Professor E. Tortonese, Director of the Museo Civico di Storia Naturale "Giacomo Doria", Genoa, for permission to examine the collections in his care, and for other kind facilities. I also thank Dr. S. Kadarsan, Director of the Museum Zoologicum Bogoriense, Bogor, for critically reading the manuscript and suggesting improvements. Research on the taxonomy of the swiftlets has been partially carried out during my tenure as National Research Council Visiting Research Associate at the Division of Birds of the Smithsonian Institution.

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A bill deformity in Richard's Pipit and the presence of *Mycobacterium*

by Peter F. Woodall

Received 19th November, 1974

INTRODUCTION

A female Richard's Pipit *Anthus novaeseelandiae* was collected on 25 August 1971 from a pebble beach of a lagoon of the Zambesi River, Chewore Wilderness Area, Rhodesia (15°37′S, 29°55′E), during an expedition of the Kirk Biological Society, University of Rhodesia. It was noticed immediately that most of the upper mandible was missing, clearly the result of previous damage and not of a shot wound during collection. The premaxilla ended just distal to the external nares in an irregular dark-coloured growth. The specimen is now in the Queen Victoria Museum, Salisbury (NM75138).

MICROBIOLOGICAL INVESTIGATION

An attempt was made to isolate any micro-organisms present in this growth. The growth was surface sterilised with absolute alcohol and under sterile conditions it was removed to distilled water and then broken up to form a suspension. Nutrient agar plates were innoculated with the suspension, and good growth was observed after 1-2 days. Microscopic examination of this culture revealed chains of rods (gram-positive) and these were acid fast using the Ziehl-Neelsen technique (Jacobs & Gerstein, 1960). No spores were found after spore staining using malachite green solution (Jacobs & Gerstein, 1960). This combination of characters (chains of rods: gram-positive and acid fast) suggests that the micro-organisms are *Mycobacterium*. Breed, Murray & Smith (1957) state that members of this genus form a natural spectrum from saprophytes (some of which may be potentially parasitic), proceeding through the tubercle bacteria to the highly host dependent leprosy bacilli. Of course, in this case it is not known whether the bacilli were present in a parasitic role, having actually caused the reduction of the mandible, or in a saprophytic role, living on dead material following a previous injury. The bacilli isolated did not appear to conform to any of the species described by Breed *et al.* (1957), however their rapid growth on agar may indicate that they belong to the saprophytic forms. Pomeroy (1962) suggests that disease may lead to bill abnormalities but writes that there appears to be no records of this.

BODY WEIGHT AND STOMACH CONTENTS

The specimen weighed 19 g and although this is below the average of 22·8 g for 29 females from Botswana (Ginn, 1971) it is by no means the lowest, Ginn (1971) reporting a range from 16–32 g for both sexes combined. While the specimen was being skinned no fat reserves were observed, but the bird did not appear to be emanciated and the sternum was not unduly prominent.

The bird's stomach contained the remains of two small acriid grasshoppers together with the mandibles of a third grasshopper. No grit was found in the stomach. In a detailed analysis of the feeding habits of this species, Borrett & Wilson (1970) found that grasshopper remains (Orthoptera: Acrididae) were present in 69% of stomachs. They also reported that grit was absent from most stomachs and suggested that its function was replaced by grasshopper mandibles.

DISCUSSION

In spite of the gross bill deformity, it seems that the bird was still able to obtain its normal food and could maintain itself in reasonable condition. In a general survey of birds with abnormal bills, Pomeroy (1962) found that many were apparently able to maintain condition and body weight despite bill deformities, and cites (p.66) a Meadow Pipit *Anthus pratensis*, reported by K. Williamson, which had the lower mandible 2 mm short and yet was only slightly below "normal weight".

ACKNOWLEDGEMENTS

My thanks are due to the members of the Kirk Biological Society who organised this expedition, in particular the leader Mr. S. Wood, and Miss J. C. Ferreira and Mr. P. L. Osborne who also assisted with the subsequent laboratory preparations. The Sir Robert Williams Travel Find helped finance the expedition. The Department of National Parks and Wildlife Management gave permission to collect in the Area, Dr. R. H. N. Smithers being very helpful in obtaining this permission for us. The Queen Victoria Museum, Salisbury provided materials and equipment. Drs. B. S. Purchase and M. R. Stuart provided much valuable advice and facilities at the Department of Botany, University of Rhodesia.

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A record of an overwintering *Oenanthe oenanthe* from Lusaka, Zambia

by D. R. Aspinwall

Received 20th November, 1974

The Wheatear *Oenanthe oenanthe* (Linnaeus) is known to be a palearctic migrant uncommonly reaching as far south as central and southern Africa. Thus Borrett & Jackson (1970), summarising its status south of the Zambezi, conclude that its "main wintering grounds lie well to the north of the

Zambezi river, the species only occasionally reaching southern Africa, when vagrants, usually young birds, wander further afield". In central Africa Dowsett (1971) recognises only seven records for Zambia; Traylor (1963) cannot quote any definite record from Angola; and for Malawi Benson (1953) can state only that it is probably regular in small numbers between October (earliest date 30 September) and March to as far south as Mzimba, at 11°53′S., although he also quotes records from Diampwe and Lilongwe, both north of 15°S. On the other hand, in eastern Africa Mackworth-Praed & Grant (1955) state that it is "a common palaearctic winter visitor to most of eastern Africa, particularly to Kenya and northern Tanganyika"; and in western Africa the same authors (1973) describe it as "a common palaearctic winter visitor to most of the more open country of western Africa, getting progressively less common further south". The following record of the species from as far south as Lusaka, at 15°26′S., is therefore noteworthy.

The occurrence is the more remarkable because it refers to the period 2 – 21 July 1974, at a time of year when the species would not normally be expected in Africa. No previous record of an "overwintering" *O. oenanthe* in Africa south of the Sahara has been traced by Benson (*in litt.*) or myself. Dowsett (1971) draws attention to the unreliability of sight records of *O. oenanthe* in central and southern Africa because of the close similarity with juveniles of the Capped Wheatear *O. pileata* (Gmelin), but the present bird was a male in summer plumage and so there would seem to be no doubt about its identity. Furthermore, A. Peterson kindly photographed the bird on 7 July: he is familiar with the wheatear in Sweden, which is of course *O. oenanthe*. Dowsett has examined the photograph, which is unsuitable for publication but has been filed at the Livingstone Museum, and he agrees that it is of *O. oenanthe*. The bird was also observed in the field by R. Stjernstedt on 8 July and by J. F. R. Colebrook-Robjent on 21 July, both of whom know the species in Europe and corroborated identification. No sightings of the bird were reported after 21 July, although the area was visited by other observers in early August and subsequently.

On each of the seven days on which I saw the bird it was on the same patch of ground opposite Kanyama Police Station, about 3 km south-west of Lusaka. The site is surrounded by a flat, open, grassy plain interspersed with gardens and small patches of bare limestone, and is itself one of many points at which virtually all soil has been removed. The bird, which was always wary, kept to the limestone knobs, except occasionally when feeding or straying onto the flatter unexcavated surrounding plain: this restriction to a particular area was noted also on 3 July by J. J. Tucker (*in litt.*). The plain was occupied by *O. pileata*, and on one occasion the two species were observed no further apart than about 10 m. It is worth noting that a similarly plumaged *O. oenanthe*, accompanied by another in winter or juvenile plumage, had previously been recorded in January/February 1974 (Aspinwall 1974), at a limestone quarry 4 km to the north-west: it is conceivable that it was the same bird.

On 21 July Colebrook-Robjent and I watched the bird utter a quiet rattling song from the ground on the periphery of the site. Mackworth-Praed & Grant (1955) state that *O. oenanthe* is "a silent bird in Africa" but amend this (1973) to "Rather silent birds in Africa", a presumed reference to Borrett & Jackson (1970), who give two December records from Rhodesia of birds uttering a "low warble" and a "warbler-like undertone",—perhaps the same vocalisation as heard by Colebrook-Robjent and myself. It seems possible that the song we heard could have been indicative of attempted

breeding. The bird was in breeding plumage, at approximately the time of year when it "should" have been breeding in the northern hemisphere and also in the month for which Benson *et al.* (1971) give Zambian breeding records for the only member of the genus, *O. pileata*, known to breed locally; the bird's restriction to a particular area could even be interpreted as territorial behaviour associated with breeding, although Borrett & Jackson (1970) noted similar behaviour in a specimen they collected in Rhodesia in December. However, there was no sign of a female being present, nor incidentally anything to suggest that the apparent courtship behaviour was directed at any *O. pileata* in the vicinity.

Moreau (1966) discussing sporadic breeding of palearctic migrant species in Africa, could quote instances for only four non-passerine species and observed that the rarity of such breeding was remarkable. A further possible record concerns the Spotted Flycatcher *Muscicapa striata* (Pallas): Brooke (1965) gives a record of a male "associated with a nest and clutch of two eggs typical of those laid by this species in the palearctic", collected in November 1928 by D. W. K. Macpherson near the Bandi River (at c. 14°55′S., 33°55′E.) in the Furancungo district of Mozambique. All but one of the records given by Moreau and Brooke appear to refer to breeding during the southern summer: the exception is a pair of Common Sandpiper *Tringa hypoleucos*, with young chicks just fledged, seen in Kenya in June, and further discussed in Benson & Irwin (1974). The present *O. oenanthe* record may have been a second example of an overwintering palearctic migrant in breeding condition, though since the bird was not collected for an examination of its gonads this cannot be proved.

ACKNOWLEDGEMENT

I am very grateful to C. W. Benson for the help he has given me in preparing this note.

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Further migrant birds in the Seychelles

by C. J. Feare

Received 20th November, 1974

During 1972 and 1973, many migrant birds were recorded in the Seychelles, most of which were new to the Seychelles (Feare 1974. *Biol. Conserv.* 6(3): 218–219), and some new to the Malagasy region. In an earlier paper (Feare 1973. *Bull. Br. Orn. Club* 93: 99–101) *Falco subbuteo* Linnaeus was claimed to

be new to the Seychelles, but in fact Moreau (*Proc. Zool. Soc. Lond.* 1938: 9) recorded this species, also from Bird Island, in November 1936.

The following list includes bird of which specimens, photographs or ciné film have been deposited at the University Museum of Zoology, Cambridge. Assistance with the identifications of some of the birds was kindly given by Messrs. C. W. Benson and R. Wagstaffe, and the observations were made during the tenure of a Natural Environment Research Council Research Fellowship at Aberdeen University.

Phaethon aethereus indicus Hume. An adult displayed to *P. lepturus* Lacépède & Daudin over Bird Island from 8 July to 11 August, again from 28 September to late October 1973, and also in May–June 1974.

Ardea purpurea Linnaeus. An immature flew to Bird Island from the north-west on 8 September 1973, and was found starving on the 20th. This bird had wing 374 mm, bill 137, tarsus 121, tail 133. A second bird was seen on 4 October 1973, and there have been previous sight records on Mahe. The time of arrival of these birds, coinciding with other palaearctic migrants, and the direction from which the first individual came, suggest that these were of the nominate race, rather than *A. p. madagascariensis* van Oort.

Egretta garzetta Linnaeus. Present on Mahe from January to 2 June 1972, with a maximum of 11 in Victoria, Mahe on 30 January, and others around Mahe and on Praslin. One bird was present in Victoria from March to May 1973. All of these birds were white.

Ardeola sp. A squacco heron was present on Bird Island from 22 to 29 September 1973. When disturbed, this bird flew from the ground to tall coconut trees, behaviour which Benson (*Ibis*, 1960, 103b: 34) recorded for *A. idae* in the Comores. From the amount of white on the wing C. W. Benson thought the Seychelles bird to be a moulting immature *A. idae.*

Phoenicopterus ruber Linnaeus. One at Victoria, Mahe from 15 January to 23 May 1972.

Anas querquedula Linnaeus. An immature male was found dead on Bird Island in November 1973. There were numerous sight-records of this species (including an adult male) on many islands of the Seychelles group from October 1972 to April 1973.

Crex crex Linnaeus. Seen on Bird Island on 5 October 1973 and caught the following day. Weight 87gm, wing 145 mm, bill 21, tarsus 40, tail 47.

Charadrius asiaticus Pallas. An adult in breeding plumage was seen, lame on Bird Island on 2 June 1973, and was found with a broken wing on 14th. Wing 144 mm, bill 20, tarsus 40, tail 50.

Tringa glareola Linnaeus. Several on Bird Island and Mahe October to December 1972. One found dead on 2 December had wing 127 mm, bill 28, tarsus 37, tail 51.

Philomachus pugnax Linnaeus. Single birds on Bird Island 26 September to 26 October 1972, and 24 to 30 September 1973, and on Mahe 2 to 4 December 1972.

Numenius arquata Linnaeus. An example of *N. a. orientalis* (Brehm) on Bird Island on 13 October 1972 had wing 310 mm, bill 170, tarsus 88, tail 139. Most curlews seen had the characters of *orientalis*, but some appeared intermediate between this and nominate *arquata*.

Glareola pratincola Linnaeus. Present on Bird Island from 25 September to 22 October 1972, with a maximum of 4 on 28 September. Comparison of photographs with specimens in the University Museum of Zoology, Cambridge suggested that these birds were *G. pratincola*, although *G. maldivarum* Fischer has occurred in the Seychelles (Benson & Roux 1967. *Oiseau* 37: 145).

Chlidonias leucopterus Temminck. One found dead at Police Bay, Mahe, on 29 November 1972 had wing 212 mm, bill 28, tarsus 19, tail 65 (centre), 78 (outer). Present around Mahe in small numbers from November 1972 to May 1973.

Merops superciliosus Linnaeus. Present on Bird Island (4–5 birds), Mahe (3), and Frigate Island (1) in November 1972. The Bird Island examples were *M. s. persicus* Pallas.

Eurystomus glaucurus Müller. One on Bird Island on 14 November 1972 was, from its size, probably the Malagasy *E. g. glaucurus*, of which there have been records on Aldabra.

Motacilla cinerea Tunstall. Present on Bird Island from 8 to 13 November 1972, with a maximum of 3 on 12th.

Oenanthe oenanthe Linnaeus. One on Bird Island from 26 to 29 October 1972.

Emberiza hortulana Linnaeus. An immature present on Bird Island on 13 and 14 November 1972 was identified as this species by R. Wagstaffe from photographs taken by Dr. R. J. Raines.

The Correct Spelling of Jerdon's Generic Name for the Thickbilled Warbler

by Gorman M. Bond

Received 20th December, 1974

Authors of the current major reference works on Asiatic birds (Hartert 1910; Vaurie 1959; Ripley 1961; Dement'ev *et al.* 1968) cite the scientific name of the Thickbilled Warbler as *Phragamaticola aedon* based on *Phragamaticola olivacea* Jerdon, 1845, and *Muscicapa Aëdon* Pallas, 1776.

There is, however, taxonomic precedent and linguistic justification for emending Jerdon's generic name to *Phragmaticola*, a name that is now considered to be a synonym of *Acrocephalus* Neumann (Vaurie 1959).

The origin of the generic designation *Phragamaticola* may be summarized as follows:

In his report on a collection of birds from southern India, Jerdon (1845) lists *Phragamaticola olivacea* Blyth, new species. In the account that follows, Jerdon makes the comment: "I forwarded it to Mr. Blyth, being myself doubtful where to locate it, and that gentleman has made of it a new genus to which he has given the above name, and will shortly fully describe its peculiarities". Jerdon then goes on to list several of the bird's characters which, though brief, satisfy all of the requirements for an original description.

Shortly thereafter, Blyth (1845) published his description of the bird but proposed a new generic name, *Arundinax olivaceus*. In this article, Blyth makes no mention of Jerdon's earlier publication but does credit him with first detecting the new taxon. Later, Blyth (1849) lists *Arundinax olivaceus* and and places Jerdon's name in synonymy but with the spelling emended to *Phragmaticola*. Since, according to Jerdon (1845), the name was originally chosen by Blyth, I believe that *Phragmaticola* is the correct spelling and that *Phragamaticola* is either a printer's error or a *lapsus* on the part of Jerdon. This conclusion is further supported by Jerdon's citation of *Phragmaticola olivacea* as a synonym of *Arundinax olivaceus* in the *Birds of India* (1863). Previously, Bonaparte (1850) and Horsfield & Moore (1854) had used the emended spelling in citing the name in their works. Subsequent authors (Gray 1869; Waterhouse 1889) also list the genus with the emended spelling *Phragmaticola*

but all later authors that I have checked (Hartert 1910; Vaurie 1959; Ripley 1961; Dement'ev *et al.* 1968), perhaps following Seebohm's (1881) *Catalogue of the Birds in the British Museum*, have overlooked Blyth's emendation and used Jerdon's original but incorrect spelling.

The etymology of the name is from the Greek *phragmatos* = "hedge" and the Latin *cola* = "dweller". Thus the proper form of Jerdon's generic name should be *Phragmaticola*.

Dr. Sálim Ali first raised the question to me about the proper spelling of the name. Drs. George E. Watson and S. Dillon Ripley kindly read and commented on the manuscript.

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The taxonomic status of Milne-Edward's fossil Sulids

by C. J. O. Harrison

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SUMMARY

Three species assigned by Milne-Edwards to the genus *Sula* are re-examined using the narrower generic criteria now current. *Sula ronzoni* of the Lower Oligocene appears to be a cormorant and is assigned to *Prophalacrocorax* (*gen. nov.*). *Sula arvernensis* of the Upper Oligocene appears to be a true sulid but generically distinct from other forms, and is assigned to *Parasula* (*gen. nov.*). *Sula pygmaea*, assigned by Brodkorb to *Microsula*, is based on the humerus of a Middle Miocene bird that co-existed with pelecaniform birds showing typically divergent osteological characters. The specimen shows very generalised characters and cannot certainly be assigned to any pelecaniform family. It is here assigned to *Pseudosula* in the Pseudosulidae (*gen. et fam. nov.*).

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When Alphonse Milne-Edwards published his work on French bird fossils about a century ago he named a large number of new species. Using

the criteria of the times he recognised very broad genera and a much simpler taxonomic structure than would be recognised now. As a result he assigned many of his new forms to Recent genera although the specimens on which they were based showed distinct osteological peculiarities. Subsequently his species have been integrated in taxonomic lists with later ones based on much more critical appraisals of morphological characters. During a survey of known fossil sulids it has become apparent that Milne-Edwards's species in this group require a re-appraisal in the contest of modern taxonomy.

The earliest of the species which he assigned to the Sulidae is *Sula ronzoni* Milne-Edwards, 1867. The specimen is an incomplete pelvis from the marnes calcaires de Ronzon, Lower Oligocene; Ronzon, near Puy-en-Velay, Auvergne. It was presumably placed in *Sula* because it shows narrow anterior iliac shields similar to those present on the specimen of *Morus bassanus* used by Milne-Edwards as his typical sulid. The pelvis is narrower and less laterally-projecting at the pectineal processes than are those of the Sulidae, and more closely resembles that of *Phalacrocorax*.

The pubes are stouter than those of *Phalacrocorax* and more like those of *Sula*, but the very long posterior synsacral region and narrowness of the pelvis match those of the former and are diagnostic characters. The constriction of the posterior ilium referred to by Milne-Edwards in his description is a variable character of the Phalacrocoracidae, and not critical in the present species. It seems necessary, on the characters available, to refer the specimen to the cormorants, Phalacrocoracidae, but to create a new genus for it. I therefore propose:—

Prophalacrocorax gen. nov.

Etymology. The generic name consists of the Greek prefix *pro* (=before) combined with the generic name of the typical cormorants, *Phalacrocorax*.

Type species. *Prophalacrocorax ronzoni* (Milne-Edwards) 1867.

Diagnosis. Posterior synsacrum and pelvis elongated. Pelvis generally narrow and iliac region posterior to acetabulum of even width. Pubes stout. Pectineal area slightly prominent laterally. Anterior lateral edges of iliac shields not very prominent or strongly curved; and posterior area of shield, anterior to acetabulum, not markedly constricted.

Comparison. Size similar to that of *Phalacrocorax carbo*.

The next species is *Sula arvernensis* Milne-Edwards, 1867. The specimen consists of a matrix block with an incomplete pelvis exposed dorsally and a sternum exposed ventrally, from the calcaire de Gannat, Upper Oligocene; Gannat, Allier. The pelvis shows general proportions like those of a sulid species, with the shorter synsacrum. The anterior end of the sternum is similar to that of *Sula* species. The posterior portion shows a number of peculiarities. The costal margin is proportionally shorter, the posterior half of the sternum a little broader with a curved lateral margin, the posterior lateral processes long, narrow and incurved, the sternal notch deep, and the middle area between the notches broad, as long as the lateral processes and divided into three lobes.

This posterior part of the sternum shows some superficial similarities to the sterna of Gaviiformes and Podicipitiformes. In view of its peculiarities the specimen cannot be assigned to an already known Recent or extinct sulid genus and, although it may be ancestral to other sulids, it requires a new generic name. I therefore propose:—

Parasula gen. nov.

Etymology. The generic name is formed from the Greek prefix *para* (= "by the side of", hence "like") and the name of the Recent genus *Sula* which it resembles in some respects.

Type species. Parasula arvernensis (Milne-Edwards) 1867.

Diagnosis. Sternum with narrow and anteriorly-projecting manubrial region. Coracoid sulcus sloping diagonally towards posterior, bluntly angled at labial prominence. Costal margin short. Sternum long with broad posterior end. Posterior lateral processes narrow, long and incurved; sternal notch long and narrow. Median, xiphial area of sternum broad, with three processes projecting to level of lateral processes. Pelvis with divergent posterior ridges of anterior iliac crest well-defined, and pelvic shield between acetabula slightly concave. Posterior and laterally-tapering shields of ischium projecting posteriorly well beyond synsacrum.

Comparison. Pelvis anterior to acetabula is of similar length to that of *Morus bassanus* but with the lateral edges of the anterior iliac shields a little less prominent. Posterior to the acetabula the pelvis is of similar width to that of *Sula variegata*, but about one-third as long again.

The final species to be considered is *Sula pygmaea* Milne-Edwards, 1874. The specimen is a small left humerus of a sea-bird, from the molasse de Léognan, Middle Miocene; Léognan, Gironde. Milne-Edwards recognised its similarity to the humeri of Pelecaniformes and assigned it to *Sula*. Wetmore (1938) described a typical small sulid from the Upper Miocene of North America, assigning it to a subgenus, *Microsula*, of the genus *Sula*. Brodkorb (1963), in compiling his catalogue, emended the period of the latter to Middle Miocene, elevated *Microsula* to a genus, and also assigned *pygmaea* to it.

Wetmore's material indicates that typical sulids were present in the Middle Miocene. *M. pygmaea* is not only atypical of both *Microsula* and *Sula*, but also so different in its characters that it does not seem reasonable to retain it in the Sulidae, since the characters available could also be used to link it closely to other families such as the Fregatidae or Phaethontidae. In the circumstances it cannot be linked with extant pelecaniform families and therefore requires a new taxon. I propose:—

PSEUDOSULIDAE *fam. nov.*

Diagnosis. Humerus small and slender. Proximal end proportionally small and palmar/anconally flattened with only slight anconal curvature. Head proximally prominent and rounded. External tuberosity poorly-developed. Internal tuberosity short and externally curved. Bicipital surface large, with well-defined distal edge, but not palmarly prominent. Ligamental furrow deepest at internal edge. Distal end with olecranal fossa proximally deep but palmarly shallow; internal edge broad and flattened. Ectepicondyle with paired muscle pits. External condyle stout. Brachialis anticus impression proximally sited, proximo-externally elongated and forming a double impression.

Pseudosula gen. nov.

Etymology. The generic name is formed from the Greek prefix *pseudo* (= false), and *Sula*, the typical sulid genus in which it was previously placed.

Type species. Pseudosula pygmaea. (Milne-Edwards) 1874.

Diagnosis. Characters those of family.

Comparison and discussion. In size the specimen resembles the humerus of *Phalacrocorax aristotelis*. The length is c. 128, width of proximal end at tuberosities 17, and width of distal end 15 mm. The prominent and centrally-placed head, sloping distally to the tuberosities, is more similar to those of *Pelecanus*, *Phaethon* or *Fregata*, although in some earlier sulids such as *Palaeosula stocktoni* (Howard 1958) the proximal head is more prominent than in Recent species. The distally shorter and rather broad bicipital surface, reducing the width of the ligamental furrow at the proximal edge, is more like that of *Phaethon* and *Fregata*, but the proximal view of the proximal end would more closely resemble that of *Sula* or *Morus* if the internal end of the head were less inflated in these. The deltoid crest is more developed than those of the Sulidae, although the curved line of muscle attachment on the distal palmar end and the shallow adjacent groove on the shaft are fairly similar to those of *Sula sula*.

The elongated and slightly angled shaft and the small proximal end resemble in these respects those of sulids, but the distal end is narrower except at its extremity, the brachialis anticus scar is narrower and more proximally elongated, the external condyle is longer and stouter, and the hollow between external condyle and the ridge of attachment of the anterior articular ligament is narrower and deeper than on the Suldiae.

The distally prominent entepicondyle typical of most of the Recent Pelecaniformes is absent. The ridge of attachment of the anterior articular ligament is less externally placed than on many Pelecaniformes, the internal side lacking the marked palmar inward slant and the ridge being stout and more similar to those of the Phalacrocoracidae. The olecranal fossa is fairly deep proximally but has only shallow penetration into the head anconally, differing in this respect from typical Pelecaniformes.

On the anconal side towards the proximal head the central ridge of the shaft divides, curving outwards towards the two tuberosities. The bicipital crest has a small distal flange on the internal edge bordering the pneumatic fossa. There is only a narrow rim between the fossa and the internal end of the ligamental furrow.

From the sum of the above characters there is an indication of slight similarity to a more simplified sulid structure, but the problem of assigning the specimen lies in its very generalised nature. If it had ocurred long before the known sulids, it might have been acceptable to tentatively place it as an ancestral sulid, though not in an extant genus. However, material assignable to Recent sulid genera occurs in both Lower and Middle Miocene. In addition the various small pelecaniform families are characterised by marked morphological specialisation. The Sulidae are less specialised in the structure of some of their bones, to an extent where any pelecaniform species with less specialised structure is likely to bear more resemblance to them than to other families within the order. It is therefore unwise to assume that such similarities as exist indicate close affinity, and preferable to avoid such inferences by assigning *pygmaea* to a separate taxon.

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The Amazonian Antshrike *Thamnophilus amazonicus* in French Guiana, with notes on nomenclature of the species

by Kenneth C. Parkes

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Mees (1974: 59) has recently described a Surinam subspecies of the Amazonian Antshrike under the name *Thamnophilus ruficollis divaricatus*. Females are said to differ from those of adjacent races in having the abdomen and under tail coverts much paler and more greyish; males are said to be somewhat darker on the underparts than those of any other race of the species. Females also differ from the adjacent race of lower Amazonia, *paraensis* Todd, in having tails that are blackish rather than rich brown. Mees states: "There is little doubt that records from (British) Guiana . . . and French Guiana . . . are referable to this subspecies".

In his original description of *Thamnophilus amazonicus paraensis* from Benevides (about 200 km NE of Belém), Pará, Brazil, Todd (1927: 154) wrote: "French Guiana specimens agree best with those from the Pará district of Brazil, but may eventually prove separable". Although the published paper did not specify the differences Todd noted between the series from the two areas, his manuscript notes state: "French Guiana females are a little paler than those from the Amazon . . . but this is possibly due to their more worn condition". The only previous author cited by Mees was Berlepsch (1908: 152), who had noted a single adult male from French Guiana as having "darker under-parts and shorter wings than an example from the Rio Tigre (Upper Amazons) and specimens from Bogotá . . ." Todd's notes called attention to the remarks of Hellmayr (1912: 43), who compared a pair from French Guiana with six females and a male from Amazonia. Hellmayr not only anticipated the colour characters used by Mees to diagnose *divaricatus*, but added that the French Guiana birds had shorter and weaker bills. Mees gave only wing and tail measurements. These indicated that tail length is not useful in separating *divaricatus* and *paraensis*, but the overlap in wing length was very slight between the smaller *divaricatus* and larger *paraensis*. My measurements of the wings of birds from Pied Saut and Tamanoir, French Guiana, accord well with those of Mees for Surinam specimens, and my larger series of *paraensis* also agrees well, although both series indicate that there is slightly more overlap than is shown by Mees's figures (10 Surinam ♂♂ [Mees], 65–71 mm; 10 topotypes of *paraensis* added to Mees's figures for 3 ♂♂, 69·5–74·5. Similarly for females, 9 Surinam 65–70, 5 + 3 *paraensis* 68·5–72·5).

Hellmayr was correct about the shorter and weaker bills of French Guiana versus Amazonian specimens, although this, too, is only an average character. In 9 ♂♂ from French Guiana, bill length (from anterior edge of nostril) was 10·5–11·4 mm (mean 10·9) and maximum bill depth 5·6–6·4 (5·9). For 10 ♂♂ from Pará the corresponding measurements are length 11·3–12·4 (11·7) and depth 6·0–7·2 (6·5).

Analysis of colour differences between the French Guiana and Pará series yielded the following results. Three of the four French Guiana females are separable from *paraensis* females on the basis of browner (less grey or olivaceous) backs. One matches the Pará series in back colour, but has the blackest tail of the French Guiana females, a character of *divaricatus*. The other three have tails that are blacker than those of five of the six female *paraensis*.

Topotypical males of *paraensis* are quite variable in depth of colour of underparts. First-year males (with retained brownish wing feathers) average paler than definitively-plumaged males. In the Pará series, oddly, there are only two first-year males; these are among the palest of the series, but can be matched among the adults. In the French Guiana series, on the other hand, five of the nine males are first-year birds. Two of these cannot be separated in colour of underparts from the four adults, whereas the other three are definitely paler. Comparing, therefore, only definitively-plumaged males with wholly black wing feathers, I find that of the 13 from Pará, three could not be separated from the French Guiana four on the basis of underparts colour, but the other ten are indeed paler.

In view of this analysis, I consider the Amazonian Antshrikes of French Guiana referable to *divaricatus* Mees, with the provision that the series shows some intergradation in colour toward *paraensis* Todd.

Novaes (1974: 93) studied a series of 14 males and 8 females of this species from the Territory of Amapá, the portion of Brazil immediately adjacent to French Guiana. He refrained from applying a trinomial in his account, stating that his females exhibited unspecified differences in colour and size from those of *paraensis*. It appears highly likely that, in view of the proximity of the localities, the Amazonian Antshrikes of Amapá resemble those of French Guiana in being closest to *divaricatus*, the description of which appeared virtually simultaneously with Novaes's paper.

As noted above, in discussing geographic variation in this species Mees used the name *Thamnophilus ruficollis* Spix rather than the familiar *T. amazonicus* Sclater. He gave no explanation for this usage; in fact, the name *amazonicus* does not appear in his paper at all. At my request, Dr. Mees was good enough to summarize for me the nomenclatorial history of this species (letter of 19 July 1974). The name *amazonicus* was introduced by Sclater (1858: 214) as a substitute for *ruficollis* Spix (1825: 27) on the premise that Spix's name was applicable only to the female, and that therefore a new name was required. Dr. Mees writes: "To me this seemed too silly an argument to honour". I fully agree that there was no necessity for Sclater's substitute name. However, authors have overlooked this point for more than a century, during which time the name *amazonicus* has become thoroughly established in the literature. Novaes (1974), whose paper I received subsequent to my correspondence with Dr. Mees, pointed out that *ruficollis* is the earliest name for the Amazonian Antshrike, but as indicated above, continued to employ the binomen *Thamnophilus amazonicus*.

In his study of Spix's types, Hellmayr (1906: 657–658) stated that the type specimen of *ruficollis* was no longer in the collection, and that he was unable to determine whether Spix's plate represented the female of *Thamnophilus amazonicus* Sclater or of *T. cinereiceps* Pelzeln. Hellmayr did not, therefore, advocate the revival of the name *ruficollis* even though he was, in general a strict follower of priority in nomenclature. According to Dr. Mees "now that these [i.e. *amazonicus* and *cinereiceps*] have been found to be conspecific, this argument falls away". But in substituting the name *ruficollis* for *amazonicus* in his paper, Mees has clearly made the assumption that the plate of *ruficollis* does in fact represent the upper Amazonian population currently called *T. a. amazonicus* and not that of southern Venezuela and northwestern Brazil currently called *T. a. cinereiceps*, although there is no evidence that Mees had any information beyond that available to Hellmayr to assist in making this decision.

I should also point out that the attribution of a type locality of "upper

Amazons" to *Thamnophilus amazonicus* Sclater by Peters (1951 : 174) and others, and the listing of "syntypes" of this name by Warren & Harrison (1971 : 21), are in error. The name *amazonicus* was clearly stated by Sclater to be a substitute name for *ruficollis* Spix. Under the provisions of Article 72 (d) of the International Code of Zoological Nomenclature, "if an author proposes a new specific name expressly as a replacement for a prior name, but at the same time applies it to particular specimens, the type of the replacement nominal species must be that of the prior nominal species, despite any contrary designation of type-specimen or different taxonomic usage of the replacement name". In other words, the type specimen of *amazonicus* Sclater is the lost type specimen of *ruficollis* Spix; as the latter has no type locality and may in fact apply to any of several subspecies recognized by Peters (1951), this is therefore also true of the replacement name *amazonicus*.

In view of the universal use of the name *Thamnophilus amazonicus* Sclater, no matter how faulty its author's reasoning may have been or how erroneous the attribution of the type locality "upper Amazons" under present nomenclatural rules, it seems obvious that reversion to Spix's earlier name would not serve the cause of nomenclatural stability. Application has therefore been made to the International Commission on Zoological Nomenclature to suppress *Thamnophilus ruficollis* Spix as an unused senior synonym under the provisions of Articles 23 (a-b) and 79 (b) of the International Code of Zoological Nomenclature as amended at the International Congress of Zoology at Monaco in 1972 (*Bull. Zool. Nomencl.*, 29, pt. 4: 185–186, 1972). Under the provisions of Articles 23 (a-b) and 80 (ii) of the Code as amended at Monaco, zoologists should continue to follow the current prevailing usage of *T. amazonicus* while the case is under consideration by the Commission.

I am indebted to Drs. G. F. Mees and Eugene Eisenmann for information used in the preparation of this note.

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The status of darters in Wallacea

by C. M. N. White

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Members of the genus *Anhinga* have been considered a single polytypic species (Mayr & Amadon, 1951: 33) or as comprising a superspecies with some forms perhaps conspecific (Hayr & Short, 1970: 29). The forms mentioned in the present note are discussed as allospecies in the latter sense.

Anhinga melanogaster of tropical Asia extends east of Wallace's Line to

Celebes where it must be not uncommon to judge by the number of specimens recorded. Rensch (1931: 506) reported the only record from the Lesser Sunda Islands, a male obtained by him in Sumbawa on April 30. This was in flightless condition owing to moult and had been caught near the coast by local people. As is well known darters moult all the flight feathers simultaneously in post-breeding moult. The Sumbawa bird may not indicate a resident population there; it could have strayed from Java, Borneo or Celebes. As pointed out below darters are subject to migratory movements to some extent. Ripley (1948) reported "about a dozen anhingas, presumably *A. melanogaster*" at Babelthuap on 12 November, 1946. The species is otherwise not known from Palau Islands.

Rensch also includes in the range of *A. melanogaster* the island of Buru in Wallacea, citing as authority Siebers (1930: 218). Stresemann (1941: 13) again gives Buru as a locality for *A. melanogaster*. However Siebers at the reference cited, identified a male collected by Toxopeus on 21 February at Wakolo Lake, Buru, as *A. novaehollandiae*, the Australian form. He stated that "it agreed well with the description in Cat. Brds. Br. Museum xxvi". Van Bemmel (1948: 399) lists *A. novaehollandiae* from Buru, and in a footnote refers to Stresemann (1941), commenting "but I am not sure that this race (*melanogaster*) has ever been collected in Buru". He evidently did not realise that Stresemann had followed Rensch (1931) and the latter as shown cited Siebers incorrectly. Rensch may have seen the Buru specimen when at Bogor, but as he does not indicate that he is amending Sieber's identification, presumably he made a mistaken citation.

Dr. S. Somadikarta has kindly examined the specimen from Buru in the Museum Zoologicum Bogoriense, Indonesia. He informs me that in comparison with *A. melanogaster* from Java, Borneo and Celebes, the example from Buru is certainly different in its darker colour, but that no material of *A. novaehollandiae* was available for comparison. The status of *A. novaehollandiae* at Buru is not clear. Siebers quotes a note by the collector "very rare at Wakolo Lake where the species was known to only a few natives". The latter however provided him with a vernacular name for it. It seems most likely that it occurs as a rare migrant from Australia. Kühn obtained two *A. novaehollandiae* at Babar, South West Islands in August and September (Hartert, 1906: 291) which presumably were migrants into Wallacea. Hoogerwerf (1964: 72) noted *A. novaehollandiae* throughout the year in south New Guinea, but with such fluctuation in numbers that he wondered whether Australian migrants as well as resident birds were involved. *A. novaehollandiae* has also once reached New Zealand as a vagrant. Darters in Australia like many other water birds may be subject to irregular periodic migratory movements due to abnormal drought or flood conditions, accounting for these records in Wallacea and elsewhere.

African *A. rufa*, if mainly sedentary, has some limited displacement of populations as noted by Chapin (1932: 412) in north-east Zaire, as has the near eastern *A. r. chantrei* (Hüe & Etchécopar, 1970: 55). The American *A. anhinga* provides the clearest evidence of migration by darters: Palmer (1962: 362) shows that birds breeding and ringed in Mississippi, U.S.A., have been recovered in Tabasco and Campeche, Mexico. Migratory movements of darters would seem to deserve more attention than they have hitherto received.

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The Pemba Island race of the African Goshawk *Accipiter tachiro*

by C. W. Benson & Hugh F. I. Elliott

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In a paper on the birds of Zanzibar and Pemba, Vaughan (1929: 604) remarked on differences between four specimens of *A. tachiro* collected by him on Pemba, presented by him to the British Museum (Natural History) and now at Tring, and those assigned to the race *A. t. sparsimfasciatus*, which represents the species on the East African mainland, at its nearest point only 30 miles from the island. Apart from colour, Vaughan also drew attention to their small size. He differentiated them from a specimen taken in Zanzibar, which he considered nearest to Rhodesian specimens attributed to *sparsimfasciatus*, in which however he noted considerable individual variation. He concluded that the material from Pemba, consisting of an adult ♂, and adult ♀ and two birds which he diagnosed as males, though they are unsexed on the labels, was perhaps hardly sufficient to justify the description of a new race.

Another specimen of this goshawk from Pemba has been acquired recently by the British Museum (Natural History). It was at one time in the collection of Captain Vivian Hewitt, and is marked "E. Mus. J. Backhouse. ♂. Hawk from Pemba Island, E. African coast. Received Nov. 1902 (Burtt)". This specimen apart (in fact it closely resembles the three Pemba males discussed by Vaughan), there are a number of reasons for thinking that the status ot the Pemba goshawk should be clarified. Wattel (1973: 66) has drawn attention to its smaller size than *sparsimfasciatus* on the adjacent mainland, and prior to this Irwin & Benson (1966: 2) had pointed out its characters in respect ot both size and colouration; in these characters, in fact, it differs at least as much as races which have long been recognised, not to mention the recently described *A. t. croizati* trom S.W. Ethiopia, distinguished from *unduliventer* ot the rest of that country by Desfayes (1974). It therefore gives a misleading impression, as White (1965: 46) does, to include not only Zanzibar but also Pemba in the range of *sparsimfasciatus*. The distinctiveness of the Pemba goshawk introduces another piece into the somewhat complex jigsaw of the island's avifauna, as analysed by Moreau (1966: 353). In general the species shows a marked preference for richer types of woodland or evergreen forest. Thus it seems to be an example, of which as Moreau says there are few in Pemba, of a "forest bird, a category that might be expected to be

particularly sedentary", as this species surely is. It is interesting that, as such, it should have diverged on an island which should properly be classified as "oceanic" (being unconnected with the continental shelf) in a manner that is reminiscent of some of the more westerly populations (especially *lopezi* of Fernando Poo), namely the richer colour of the underparts and smaller size.

White (*loc. cit.*) follows Chapin (1932: 628), and for the same reasons, in assigning the otherwise rather similar middle-sized goshawks with a relatively short middle toe and tarsus (formerly recognised by their allocation to a separate genus "*Astur*"), which range over well-wooded areas of Africa south of the Sahara, to two species—*toussenelii* and *tachiro*. The "link" form might appear (misleadingly) to be *macrocelides* of Sierra Leone to western Cameroun, since it was assigned by Sclater (1924: 70) to *tachiro*, not *toussenelii*, which he nevertheless kept as species apart. However, Bannerman (1930: 288), Peters (1931: 209), Brown & Amadon (1968: 492) and Wattel (1973: 65) have all recognised only the one species. The reason why Chapin & White considered there were two was because both occurred in the Uelle area, in north-eastern Zaire, without evidence of intergradation. Nevertheless Wattel (1973: 71) has shown that although in this area the ranges of *canescens* (in the *toussenelii* group) and *sparsimfasciatus* (in the *tachiro* group) interdigitate, in no locality have they been found to be sympatric. Furthermore he records an intermediate specimen from Abimva, Uelle. We therefore follow Wattel and his predecessors in regarding *tachiro* and *toussenelii* as conspecific.

We formally name the Pemba race of the African Goshawk:—

Accipiter tachiro pembaensis, subsp. nov.

Description: (1) Adult ♂ (plumage): nearest to *A. t. tachiro*, but thighs and barring of underparts pinkish-rather than sepia-brown in tone, a similar colour also suffusing the throat; axillaries merely with a few broken bars instead of being regularly and heavily barred; white mirrors on central tail-feathers obsolete, not clearly marked. At once distinguishable from *A. t. sparsimfasciatus*, in which barring of underparts is greyish brown, thighs in some specimens are almost white and the white mirrors in tail are well marked (as in *A. t. tachiro*).

(2) Adult ♀ (plumage): Brown of upperparts with a slight greyish tone, lacking in *A. t. tachiro* and *sparsimfasciatus*, which are indistinguishable from each other; underparts with a chestnut wash, especially on the thighs, more accentuated than in any specimen of these other two races, from the majority of which it is also distinguishable by extremely sparse and rufous brown rather than sepia barring; axillaries pale chestnut with barring almost obsolete instead of the white, heavily barred, which is usual in the two other races.

(3) Immature (plumage): unknown.

(4) Size: Relatively small. A comparative summary of wing-lengths in mm is as follows:—

	A. t. pembaensis	
4♂♂	190, 193, 194, 200	1♀ 224
	A. t. sparsimfasciatus	
10♂♂	204–227 (212·9)	17♀♀ 240–263 (252·5)
	A. t. tachiro	
17♂♂	202–216 (209·5)	7♀♀ 240–255 (245·1)

[Figures from Irwin & Benson, 1966: 2; for *sparsimfasciatus* from Mozambique, Malawi and Zambia northwards to Kenya and Uganda, for nominate

tachiro from South Africa. From Rhodesia, where Irwin & Benson found intergradation, they give 9 ♂♂ as 207–226 (212·6) and 3♀♀ 250, 252, 257 mm.]

Distribution: Confined to Pemba Island, off coast of Tanzania at 5° 20′ S., 39° 40′ E.

Type: Adult male, testes somewhat enlarged, Pemba Island, 14 September 1928, collector J. H. Vaughan; in the British Museum (Natural History), Tring, registered number 1929. 6. 27. 14.

Measurements of type: Wing 193, tail 156, tarsus 57, bill (from feathers) 23, middle toe and claw 36·5 mm.

Material examined: Material from the Tanzanian off-shore islands of Pemba, Zanzibar and Mafia is detailed in the Table. In addition, the following adults in Tring from the mainland were studied:—*sparsimfasciatus*, 8♂♂ 14♀♀; nominate *tachiro*, 15♂♂, 8♀♀. Thirty immature specimens in all, of these two races, were also available in Tring; likewise both adults and immatures of all the other races generally recognised.

Sex	*Locality*	*Date*	*Wing*	*Tail*	*Tarsus*	*Bill (from feathers)*	*Middle toe and claw*	*Collector; Other remarks*
				A. t. pembaensis				
♂	Pemba	14.9.28	193	156	57	23	36·5	J. H. Vaughan. Type of *pembaensis*
[♂]	Pemba	3.10.22	190	146	62	23·5	41	J. H. Vaughan
[♂]	Pemba	26.7.28	194	152	57	23	37	J. H. Vaughan
♂	Pemba	?	200	154	58	22	40	Collector and date of collection not known. Formerly in Hewitt collection.
♀	Pemba	8.9.28	224	178	62	26	45	J. H. Vaughan
				A. t. sparsimfasciatus				
♂	Zanzibar	3.11.26	214	171	61	26	44	J. H. Vaughan
♂	Zanzibar	8.10.36	214	174	61	24	49	J. Vincent
♀	Zanzibar	21.8.32	253	208	69	29	54	R. H. W. Pakenham. Immature.
♂(?)	Mafia	19.9.37	212	180	60	23	45	p.p. R. E. Moreau. Possibly mis-sexed, see text.

N.B. All adult except Zanzibar ♀

Further remarks: Vaughan (1929: 605) likened his male from Zanzibar (see Table) to specimens from Rhodesia (he was presumably referring to two adult males in Tring from Selinda, eastern Rhodesia, considered by Irwin & Benson, 1966: 2, to be *sparsimfasciatus*, even although they found some specimens in other museums from eastern Rhodesia to be intermediate with nominate *tachiro*). Actually, despite the fact the Zanzibar is the type-locality of *sparsimfasciatus*, Vaughan's specimen on the whole agrees best in colour with some males of nominate *tachiro*. On the other hand, the male collected by Vincent on Zanzibar is very similar to mainland specimens of *sparsimfasciatus*, and Vaughan's specimen must be considered as somewhat aberrant.

Irwin & Benson (*loc. cit.*) gave the colour-differences between the sexes (when adult) of nominate *tachiro* and *sparsimfasciatus*. These can be recapitulated (with slight amendment) as being normally as follows:—

(a) upperparts dark slate in ♂, dark brown in ♀.

(b) white mirrors on central tail-feathers well developed in ♂, rudimentary or absent in ♀.

(c) barring on underparts regular and well developed in ♂, in ♀ very variable but often reduced and more sepia in tone; flanks in ♀ also variable, but often white without any rufous tone.

The detailing of these differences is necessary in considering the Mafia specimen in the Table, which was recorded as a ♂ *sparsimfasciatus* by Moreau (1940: 69), without comment. In colour, however, it is a typical female, dark brown above, with sepia-brown, rather sparse, barring below. The possibility exists that it was mis-sexed (according to the label the sexual organs were described by the African collector as "unenlarged"). If it was mis-sexed and in reality a female, then the Mafia population, like that of Pemba, would seem to be very small in dimensions (see wing-lengths quoted above, and Table). Against this possibility, there is a very similar specimen from Tambarara, Mozambique, ca. 19° S., 34° E., collected by C. H. B. Grant on 9 May 1907, and sexed by him as a male. It only noticeably differs from the Mafia specimen in having the underparts more heavily barred. Its wing-length of a mere 204 mm strongly suggests that it was correctly sexed. This specimen was assigned by Irwin & Benson to *sparsimfasciatus* without any particular comment, but it's certainly aberrant. It can only be decided from further investigation in the field on Mafia whether Moreau's specimen is also aberrant or represents a distinct population characterised by small size and no doubt also small numbers.

As with adult females, it does not appear possible to distinguish between immature specimens of nominate *tachiro* and *sparsimfasciatus*. In either sex, both have dark brown upperparts and white underparts spotted dark brown, with relatively little individual variation. There is nothing distinctive about the immature from Zanzibar.

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A catalogued specimen of *Coua delalandei* (Temminck) (Cuculidae) in Merseyside County Museums, Liverpool

by P. J. Morgan

Received 10th February, 1975

J. C. Greenway (1967) lists several specimens of extinct birds in the collections of Merseyside County Museums (ex City of Liverpool Museums). Details of these were taken from the Bulletin of Liverpool Museums but the *Catalogue of Birds in the Derby Museum* published in the same journal was not

fully consulted. Many specimens are omitted therefore and one of these was *Coua delalandei*, rediscovered recently during the preparation of a list of extinct and vanishing birds in the collections. The specimen has now been located and also examined at Cambridge.

The study skin in very good condition came with the Lord Derby (XIIIth Earl) collection to Liverpool in 1851. It is not recorded in his manuscript catalogue, complete until 1834 when he succeeded to the Earldom, nor in Louis Fraser's six volume manuscript Catalogue of the Birds in the Knowsley Museum. The latter lists many specimens but not many of those received during the 1840s and 1850s. A large number of these specimens were never fully sorted but were later allocated a special square label number and from 1851 onwards were entered in a genus inventory by T. J. Moore, the first curator of the Derby Museum at Liverpool.

C. delalandei is one of these specimens, bearing label [D] 4055 and a label inscribed "Coccyzus Delalandei (Temm), Habitat Madagascar" in Fraser's handwriting. Fraser worked full time at Knowsley Hall from 1848 till 1850. There is no information as to the exact date or vendor amongst the archival material extant for this period. Lord Derby received material from many sources during the 1840s and among these were the Maison Verreaux, and Leadbeater who dealt with Temminck (Forbes 1898) and Frank of Amsterdam. The lists and purchase prices at Liverpool for the dates concerned are incomplete and unless details are found amongst papers of the possible vendors no information regarding the collector and date of collection can be ascertained. No additional information can be added therefore to the discussion on status and extinction of this species, as outlined by Rand (1936), Greenway (1967), Benson & Schuz (1971) and Schifter (1973).

It is evident from this overlooked record and published papers that the Catalogue of Birds in the Derby Museum, published in the Bulletin of Liverpool Museums between 1897 and 1900 by H. O. Forbes & H. C. Robinson, is not generally consulted. Its limited availability and incompleteness probably contribute to this situation but it is the only catalogue to have been published on the birds in the Merseyside County Museums apart from the privately printed Tristram catalogue of his first collection (Tristram 1889), one of which is now housed at Liverpool. The specimens listed cover an important period from the late 1770s (Cook material, in prep.) to the 1890s with regard to extinct forms and Type material; the latter is under revision and due for publication in late 1975 (R. Wagstaffe pers. comm.).

To summarise, attention is drawn to a specimen of the extinct *Coua delalandei*, details of which were published (Forbes & Robinson 1898) but in a journal not now generally consulted.

ACKNOWLEDGEMENTS

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The systematic position of the Madagascan partridge *Margaroperdix madagascariensis* (Scopoli)

by Peter G. H. Frost

Received 2nd February, 1975

The endemic Madagascan galliform *Margaroperdix madagascariensis* is a bird of uncertain phylogenetic affinities. Hall (1963), in discussing the systematics of the genus *Francolinus*, concluded that *Margaroperdix* was not closely related to the francolins despite superficial similarities in plumage colouration to the forest francolin *Francolinus lathami* of west central Africa. Earlier Milne-Edwards & Grandidier (1885) had described the skeleton of *Margaroperdix* and had compared it with the partridge *Perdix* and the quail *Coturnix*. The extent of the comparison was limited. Moreover, no consideration was given to the functional significance of the characters described and therefore to the possibility of convergence. However, their comparison indicated a closer affinity between the medium-sized *Margaroperdix* and the smaller *Coturnix*, than between *Margaroperdix* and the relatively larger *Perdix*. This note considers other evidence which supports the idea for a systematic relationship between *Margaroperdix* and the old world quails.

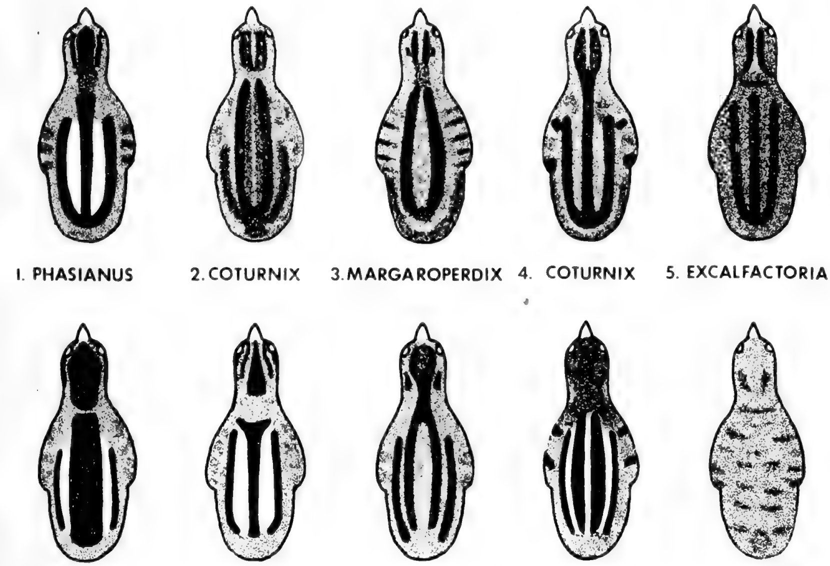
The dorsal plumage patterns of the downy young of precocial birds have been used by a number of researchers to indicate phylogenetic similarities and differences. Short (1967) used natal plumage patterns, together with egg colour, to corroborate other evidence in reassessing relationships within the genera of the grouse sub-family Tetraoninae. More extensive use of natal plumage patterns as a basis for determining phylogenetic affinities has been made by Delacour & Mayr (1945) for the Anatidae; Storer (1967) for the Podicipedidae; and Jehl (1968) for the Charadrii. Accordingly I have examined a specimen of the downy young of the *Margaroperdix* in the bird collection of the British Museum of Natural History. The chick was compared with the chicks of the following genera (species in brackets): *Phasianus* (*colchicus*); *Coturnix* (*coturnix*, *delegorguei*); *Excalfactoria* (*chinensis*); *Francolinus* (*adspersus*, *afer*, *ahantensis*, *coqui*, *erckelii*, *francolinus*, *lathami*, *natalensis*, *pondocerianus*, *squamatus*); *Perdix* (*perdix*); *Alectoris* (*barbara*, *graeca*, *rufa*); and *Ammoperdix* (*heyi*, *griseogularis*).

Representatives of the groups are diagrammatically illustrated in Figure 1.

While there is considerable overall homogeneity in the general pattern of the downy young of all these genera (except *Ammoperdix*) it appears that *Margaroperdix* is most similar to *Coturnix delegorguei*. Both genera have two dorsal stripes and a pair of head stripes. In *C. delegorguei* the dorsal stripes are joined posteriorly but in *Margaroperdix* this fusion is less clearly defined. *Margaroperdix* does not resemble at all closely any of the other genera studied. While the limited nature of this investigation precludes any detailed statements on the relationships of these other genera, some points of general

interest can be made. *C. delegorguei* does not resemble either *C. coturnix* or *Excalfactoria chinensis*. These latter two species are characterised by having three parallel dorsal stripes joined posteriorly. However, these differences may be more apparent than real as *C. delogorguei* has a pair of faint stripes arising posteriorly to the junction of the main stripes and running laterally forward. This complex of stripes might be regarded as a further elaboration of a basic pattern as adumbrated in *C. coturnix* and *E. chinensis*. The egg white

FIGURE 1



Diagrammatic illustration of the dorsal natal plumage pattern of:

1. *Phasianus colchicus;*
2. *Coturnix delegorguei;*
3. *Margaroperdix madagascariensis;*
4. *Coturnix coturnix;*
5. *Excalfactoria chinensis;*
6. *Francolinus ahantensis;*
7. *Francolinus francolinus;*
8. *Perdix perdix;*
9. *Alectoris rufa;*
10. *Ammoperdix griseogularis.*

protein data of Sibley (1960) support the close relationship between *C. coturnix* and *Excalfactoria*. The electrophoretic pattern for *C. delegorguei* is slightly (? significantly) different.

There is also a vague similarity between the natal down patterns of *C. delegorguei* and *Perdix perdix*, though any putative relationship here is not supported by the egg white protein data. Finally there are similarities in natal down pattern between *Phasianus* and *Francolinus*, a relationship supported by egg white protein analysis. Therefore, it is suggested that of the genera

studied, *Coturnix* (specifically *C. delegorguei*) most closely resembles *Margaroperdix* in natal down pattern. This confirms the limited findings of Milne-Edwards & Grandidier (1885). This suggestion could be tested using egg white protein analysis.

Central to the whole rationale underlying the use of natal plumage patterns as a guide to phylogenies is the assumption that these patterns are conservative and are a little altered through natural selection. Natural selection is thought to act on the general background colour of the down rather than on the basic pattern. This assumption needs to be examined critically, and it is suprising that there has been no experimental work to support or refute it.

Baker (1969) has suggested that natal plumage patterns are correlated with substrate colour and therefore reflect selection for microhabitat crypsis. However, I agree with Jehl (1968) that the background colour of the natal down is more closely correlated with substrate colour than is the basic pattern. This can be illustrated with reference to the francolins. Despite the wide ecological tolerances of the group as a whole, the dorsal patterns of the downy young are very similar. However, there exists considerable variation in both background colour and in the elaboration of the basic pattern. The two species illustrated, *Francolinus francolinus* and *F. ahantensis* (Figure 1), represent the approximate extremes found within the genus. *F. francolinus*, with a narrow mid-dorsal stripe, inhabits relatively dry country while *F. ahantensis*, with a broad mid-dorsal stripe, inhabits moist, dense bush. Obviously the overall patterns of these chicks are adapted to their respective substrate types and colour; on the one hand dry and pale and on the other moist and dark. The downy young of the forest francolin *F. lathami* is even darker and the basic pattern has been almost totally obscured by the dark background down. Therefore, despite wide variations in ecological conditions, and consequently in natal plumage colour, there is a basic pattern common to all species within the genus.

One exception to this general trend of variation in background colour rather than in basic pattern, is the sand partridge, *Ammoperdix*. Members of this genus inhabit open sandy habitats. The substrate colour is usually pale and relatively uniform. Therefore, it is no surprise that the downy young exhibit no bold upper part pattern. This one might interpret as an example of pattern loss. Jehl (1968) gives other examples of this phenomenon in his study of the Charadrii. Therefore, I conclude that while patterns are undoubtedly subject to natural selection, the basic patterns are generally conservative enough to serve as a guide to interpreting relationships between genera.

The relative importance of this information with regard to *Margaroperdix* concerns the evolution of this species as the only endemic galliform on Madagascar. Despite the relative distinctness of the species and the presumed long history of colonisation, there has been no adaptive radiation of the stock. The species is strongly sexually dimorphic in plumage. The males are brightly coloured; the females are a cryptic brown. Neither sex has spurs. The selection pressures that have contributed to the evolution of these characteristics are not known. The strong sexual dimorphism is unusual for an island species, where birds are usually dull and monomorphic (Sibley 1957). Sibley (*op. cit.*) has argued that sexual dimorphism, resulting in highly coloured males, has evolved to prevent hybridisation with closely related species. The reduction in, or lack of, sexual dimorphism in island Anatidae, where congeners are absent, has been used to support this argument. Clearly, the argument does not hold in this case, for there are no potential species

with which hybridisation can occur, and yet *Margaroperdix* is strongly dimorphic. Instead I agree with Siegfried (1974) that sexual dimorphism is the consequence of sexual selection reflecting epigamic and intrasexual selection pressures brought on through social courtship. *Margaroperdix* may well be polygynous as is *Excalfactoria*. This should be investigated, particularly the ecological conditions favouring polygyny.

If *Margaroperdix* has evolved from some-quail like ancestor (presumed here to be similar in size to modern day quails) then the species represents a further example of an increase in body size on islands. Although I have no figures for fat free body weights of either *Margaroperdix* or *C. delegorguei*, I have used wing length as an indicator of body size. Having handled specimens of both species, I am confident that this is a valid approximation. I have tabled and compared these data, and those for culmen length, in Table 1. The data for *C. delegorguei* have been taken from MacLachlan & Liversidge (1970).

TABLE 1

Wing length and culmen length comparisons between *Margaroperdix madagascariensis* and *Coturnix delegorguei*. To facilitate comparison the separate data for the sexes of *M. madagascariensis* have been combined.

Species	*Sex*	*N*	*Wing mean (range)*	*Percent difference*	*Culmen mean (range)*	*Percent difference*
M. madagascariensis	♂	18	129 (119–139)	3	23·9 (22·6–25·0)	10
	♀	15	125 (121–131)		21·7 (20·9–23·7)	
	combined	33	127 (119–139)	34	22·9 (20·9–25·0)	91
C. delegorguei	combined	25	95 (85–100)		estimate 12 (11–13)	

Combining the separate data for the sexes of *Margaroperdix* to facilitate comparison, it appears that on average wing length in this species is some 34% longer than *C. delegorguei*. There is an even greater disparity in culmen length, where *Margaroperdix* is on average 91% larger. These data indicate considerable ecological release (Grant 1968), no doubt as a consequence of reduced competition from ecologically similar species. However, we know little about the ecology of *Margaroperdix*. The species appears to occupy a wide range of habitats, particularly secondary bush and neighbouring grasslands (Rand 1936). Clearly there is much to be learnt about this unique species.

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I am grateful to all these people for their interest.

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Observations on the Adamawa Turtle Dove

by Brian Wood

Received 25th February, 1975

Remarkably little is known of the ecology and behaviour of the Adamawa Turtle Dove *Streptopelia hypopyrrha*. This is rather surprising, since it is a common and conspicuous bird on the Jos Plateau in Nigeria (Lang 1966, pers. obs.) although it is apparently limited in range to this plateau and the Adamawa Highlands of Cameroun (Bannerman 1953). I was resident at Vom, on the Jos Plateau, from early November 1973 until May 1974 and was able, during that time, to make occasional observations on this little-known species. In the following account of these observations the nomenclature used in describing behaviour and in the transcription of calls follows that of Goodwin (1970).

Although the Jos Plateau as a whole is rather open and with few trees, Vom and its immediate surroundings are rather well wooded, as a result of the planting of non-indigenous species (mainly gums *Eucalyptus* spp.), and supports a dense population of Adamawa Turtle Doves. The garden in which many of my observations were made is approximately two hectares in extent, rather more than half of this containing mature trees and bushes (Mangos *Mangifera indica* and Monterey Cypress *Cupressus macrocarpa* predominating), with vegetable gardens and rather sparse grass beneath the trees. In November three male Adamawa Turtle Doves had territories within this garden, though two of these were towards one edge and the birds frequently ventured into trees outside the garden. Even if perhaps enhanced by the presence of mangos, whose dense foliage seems to be particularly favoured by this species for nesting, I do not believe the high population density in the garden to be atypical.

TERRITORIAL BEHAVIOUR

Though it was possible to hear birds in song on almost any day, there was a definite peak in this activity. In December and the first half of January song could be heard from one or more of the three resident males at almost all

times of the day. Aggressive territorial behaviour was also at a peak during this time. Song and aggression remained frequent until early March, were less often recorded from then until late April, and thereafter noted only infrequently. Throughout this period of declining activity, renewed outbursts of song and territorial behaviour were noted especially when a day of clear weather followed several dull days in the wake of the harmattan.

The song, or advertising coo, is usually delivered from a prominent perch, and each male had several favourite and much used delivery points. These were usually branches high in the tallest trees on the edge of the canopy, where the singing bird could be readily seen, and from where he could presumably command a view over much of his defended area. One of the three males, however, habitually sang from the top of a very large and prominent boulder on the hillside above the garden, which also afforded an excellent view over his territory.

A tape recording of the song of one of the males was made during December and I have used this in transcribing the following description. Most frequently recorded is a three note call, which may be transcribed as *Croorr crr-croor*. This is extremely similar to the nest call of the Turtle Dove *Streptopelia turtur*, though rather deeper in tone. Sometimes an additional note is added and the call then becomes *Croorr crr-croorr coor*. The basic trisyllabic call is also given in a slower and very heavy-toned version, *Croorr, croorr croo*, which, in its richness of tone and form of delivery, often reminded me of the calls of the Woodpigeon *Columba palumbus*.

Direct aggression between territorial birds was noted on many occasions, and fights that I witnessed invariably took place in the crown of a tree, never on the ground. Fighting usually resulted when an intruding bird entered the defended area of an established territorial male and failed to flee when approached by the territory owner. The intruder would then be more closely approached, often in gradual stages, until both birds were eventually standing close together, usually parallel to each other. In this position each would occasionally flick open the wing nearest to its opponent, or hold it aloft in a threatening position. This in turn led to direct fighting, with each bird striking the other with the nearer wing, whilst usually keeping the other wing closed. Both would constantly manoeuvre for position, changing perch frequently and sometimes rotating through 180° so as to present the opposite wing to their opponent. Sometimes these contests were prolonged and lasted upwards of thirty minutes. Occasionally they were watched by a third bird, apparently female, from a nearby tree or higher perch in the same tree.

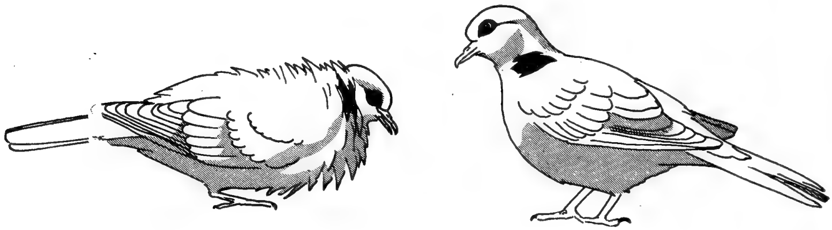
Once fighting was broken off one of the contestants would take flight, to be pursued by the victor in a rapid and direct chase. This usually ended when both alighted in a tree at some distance from the original battle, presumably on the territorial boundary of the birds concerned. Both would then threaten and extend one wing, before gradually moving further apart and eventually going their independent ways. No calling was noted during these contests.

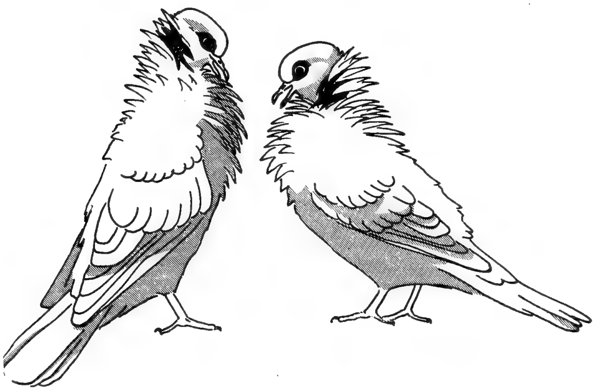
Males also often indulged in display flights. Usually a bird that had been giving the advertising coo for some time, and especially if a second male was calling nearby or a female close at hand, would rise in steeply ascending flight, giving one or two wing claps as it did so, until clear of the tree tops. Then on stiff wings, slightly inclined below the horizontal, and with tail broadly spread, it would glide slowly down again, often eventually returning to the same perch. The angle of descent was so shallow that these gliding displays often lasted for almost half a minute, with frequent changes of direction by the displaying bird.

BREEDING BEHAVIOUR

Display and copulation were observed on several occasions. Each pair appeared to have a traditional site for this. In the pair whose display was most frequently observed, this consisted of an almost horizontal branch of a Monterey Cypress, about three metres above the ground, free of obstructing side branches and sufficiently wide to allow the birds to stand either across or along its length. In its most complete version display and copulation took the following form:—

1) With both birds present on the traditional display branch the sequence is initiated by the male. He leans forewards towards the female whilst





Top: The pre-copulatory bowing display of the Adamawa Turtle Dove. The male (on the left) is shown with head at the top of its bobbing movement.

Bottom: The penguin display.

standing along the branch, lowering his body until crouched almost horizontally, with raised neck feathers. In this position he begins a rapid up and down movement of his head, and each time this is lowered utters a short *crooa* note. The result is a rhythmic series of notes, *crooa-crooa-crooa-crooa*, in time with his bowing display.

2) At first the female seemingly ignores his behaviour, then begins to pace up and down the branch in front of the male. She eventually raises her head on extended neck and approaches him closely. As the two birds meet, both

assume a more vertical posture, with necks stretched. Bill scissoring follows, in which both birds occasionally open the bill.

3) Scissoring is broken off by the female, who then crouches across the branch in front of the male in invitation, with feathers loosened and wings slightly lowered.

4) The male mounts, raising his wings as he does so. As copulation is completed he fluffs his throat feathers and flaps his wings vigorously, eventually dismounting by unbalancing backwards off the female, and flying back to the branch beside her.

5) Both birds, side by side on the branch, assume a vertical posture and pirouette slightly until more or less facing one another. Each raises its head skywards and then back, so that the head is eventually laid far back between the shoulders, with bill tucked in and chest feathers raised. During this display (the penguin display), which is equally intense in both sexes, a harsh rattling call is uttered, reminiscent of the sound made by rapidly indrawn breath. This particular call was never heard in any other context.

6) The penguin display is very brief, lasting no more than 3 or 4 seconds, and is followed by an extended bout of allo-preening, usually initiated by the female. Both birds gradually settle into a resting position, side by side, and either preen one another or themselves. They may remain like this for up to half an hour before parting.

This full sequence of display was not always followed and on several occasions the female induced copulation by merely billing briefly with the male, as soon as he joined her on the display branch, and then squatting in invitation. On these occasions the male did not perform his bowing display, though the penguin display and an extended bout of allo-preening always followed copulation. Sometimes, after such a brief initial bout of billing by the female, the male would be hesitant to respond and would false preen and defer mounting until encouraged by further billing and squatting by his mate.

On 24 November a female Adamawa Turtle Dove was disturbed from its nest in a dense clump of Bougainvillea. The nest itself was about two metres from the ground and consisted of a thin, flat, loosely-woven platform of slender twigs, about 15 cm in overall diameter; in fact of typical Columbiform construction. It was empty and, although carefully undisturbed subsequently, it was not reoccupied.

The following day I found a further two nests of very similar construction in a small Mango tree within the territory of one of the other pairs in the garden, which were clearly old nests belonging to this species. One of these was of fairly recent construction and in good repair, though it did not appear to have been used. The second was much older and falling apart. They were respectively 4 and 5 m above the ground, the total height of the tree being only 7 m, with a crown diameter of 4 m.

On 28 November this pair began the construction of a further nest in a fork of the same Mango tree, about 4 m above the ground. At any one time only one bird of the pair engaged on collection of nest material, though I have records of both male and female doing so. Most of the twigs used in the construction were collected from the ground within 20 m of the tree, though on occasion material was also collected from the crowns of nearby Monterey Cypresses. The woody inflorescences of Mango, which littered the ground in profusion, were also utilised, though apparently more sturdy material was preferred.

Construction continued spasmodically and material was still being added on 16 December, though by now the nest appeared complete and the female spent much time sitting on it. During the morning of 17 December she laid one egg, which was pure white and of typical elliptical shape. When I next inspected the nest on 26 December it was empty, though there were no remains of eggs to indicate what predator may have been involved.

I observed a bird building a nest in a Mango tree some 30 m away from this unsuccessful nest on 30 January but it was not completed. The bird involved in this construction was apparently carrying material to a nest site not occupied by its mate, since, when I climbed the tree between visits by the building bird in order to locate the nest, I did not flush a second bird from the tree. Such behaviour is apparently extremely unusual among doves. No further new nests were located during my stay in Vom.

THE ANNUAL CYCLE

Woods (1967) has suggested that the Adamawa Turtle Dove breeds throughout the year, though in view of the highly seasonal nature of its environment this would seem surprising. I found nests in construction or use on 24 November, from 28 November to 18 December, and on 30/31 January. Nests with eggs or young are recorded by Lang (1966) on 28–30 November, by Smith (1966) on 23 September, 24 September, 30 October and 3 November, and by Woods (1967) on 15–28 March. Breeding records are therefore lacking for the months of April to August, which is the rainy season on the Jos Plateau. During this season one would expect food to be less plentiful for granivorous ground-feeding birds because of the germination of seeds and rapid growth of concealing herbaceous vegetation promoted by the rains. I have, moreover, noted a corresponding seasonality in territorial behaviour.

Up to mid-March I rarely saw more than two or three Adamawa Turtle Doves in close association with one another. Breeding birds invariably fed alone or as a pair. I always found them feeding on the ground in areas of short grass or only sparse vegetation, though often this was beneath trees, and I cannot definitely say that they do not also feed in the canopy. When feeding they maintain a slow forewards movement, pecking items from the ground in front of themselves as they move. Small seeds appear to form the bulk of the items taken, though even at close range through binoculars I found it difficult to determine these items with certainty.

In late March and throughout April and May birds showed an increasing tendency to congregate in particularly favourable feeding areas, often in association with Speckled Pigeons *Columba guinea* and Vinaceous Doves *Streptopelia vinacea*. When disturbed the three species would fly off separately, and the Adamawa Turtle Doves usually did so as a flock, often flying some distance to cover in a compact group, and perching there in close association with one another. They usually returned to feed also in groups of several birds. The largest such association I encountered contained over 60 individuals and 30 together was a common sight. Birds in these flocks were observed to be in wing and tail moult, and one mist-netted from a flock on 19 April was found to be replacing primary 7 and retrices 3 and 5 (numbered centrifugally) and secondary 3 (numbered centripetally).

The available evidence therefore points to a marked seasonal cycle in this species, with a protracted breeding season from perhaps August to March, followed by a period of moult during which the birds flock, and a cessation

of breeding in the first part of the rainy season from April to July. A similar cycle is apparent for other doves at Vom (Smith 1962, 1966, pers. obs.) and probably applies throughout West African savannas according to the local timing of wet and dry seasons.

TAXONOMIC RELATIONSHIPS OF *Streptopelia hypopyrrha*

Goodwin (1970) considers the Adamawa Turtle Dove to be somewhat intermediate between and closely related to *Streptopelia turtur* and *S. lugens*, possibly conspecific with the latter. He classes all three within one superspecies.

My observations on *S. hypopyrrha* tend to confirm this classification. Certainly this species and *S. turtur* must be very closely related since they have many close similarities in behaviour and voice. As far as I am aware they are the only two *Streptopelia* species in which the penguin display has been recorded, although a very similar display is described for the Laughing Dove *S. senegalensis*. The most frequently used song of *S. hypopyrrha* is extremely similar to the nest call of *S. turtur*, though deeper in tone. As the latter moults in African winter quarters, it seems likely that this event occurs simultaneously in both species.

S. lugens, with which I am unfamiliar in the field, is in appearance extremely similar to *S. hypopyrrha* and undoubtedly both have a common origin. It would be extremely interesting to know if it exhibits an annual cycle, in its less highly seasonal East African range, which corresponds in timing to that of *S. hypopyrrha*.

ACKNOWLEDGEMENTS

My residence at Vom was made possible through the kindness or Dr. and Mrs. A. Rogerson, who provided me with accommodation at their home throughout my stay. During that time I was in receipt of a grant from the Natural Environment Research Council, to whom I am also indebted.

Derek Goodwin read and made many helpful comments on earlier drafts of this paper.

SUMMARY

The breeding behaviour of the Adamawa Turtle Dove at Vom, in central Nigeria, is discussed, and descriptions given of territorial and nesting behaviour, song and display. A seasonal cycle of activity is postulated for this species, with breeding activity largely confined to the dry season. Moult takes place at the end of the dry season, when the birds flock, and breeding does not resume until late in the ensuing wet season.

In many respects this species is closely similar to the European Turtle Dove, and its taxonomic position is briefly discussed.

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More Bird Records from Surinam

by F. Haverschmidt

Received 17th March, 1975

This paper contains a number of bird records collected by me in Surinam during two visits in 1972/1973 and 1973/1974 and follows up my previous paper (Haverschmidt 1972). I paid special attention to breeding birds and the records presented here give either an extension to the breeding seasons mentioned in my *Birds of Surinam* (Haverschmidt 1968) or pertain to species whose nests have been but seldom found.

Falco deiroleucus, Orange-breasted Falcon. This fine Falcon is widely spread in Surinam but not numerous. Four specimens were obtained and the following is a list of sight records: 30 Nov. 1958 one near Paramaribo, 11 Oct. 1964 one near Phedra, 13 Nov. 1964 a pair on the Coppename River, 28 Feb. 1965 one near Kraka and one near Rama, 13 Mar. 1965 one in my garden near Paramaribo, 26 Jan., 17 Feb. and 8 Mar. 1967 apparently the same immature bird near Paramaribo, 1 June 1967 one near Blackawatra, 14 Nov. 1967 one near Leonsberg and 28 Nov. 1972 one near Paramaribo.

Anhima cornuta, Horned Screamer. This rare bird is only known from marshes behind the coast line near the mouth of the Maroni River in the east of the country. It was collected and observed in this region more than a century ago by Kappler (Haverschmidt 1973). It still occurs, as on 1 July 1966 a group of 7 birds were seen and one was shot by a hunter, who showed me its remains.

Pluvialis squatarola, Grey Plover. A regular and fairly numerous visitor on the coast. On 28 Nov. 1973, however, I collected a male on a savanna near Zanderij about 60 km from the coast. I had never before seen the species so far inland.

Bartramia longicauda, Upland Plover. As reported earlier (Haverschmidt 1966) the Upland Plover is regularly present in Surinam during the northern winter. On 6 Dec., 11 and 28 Dec. 1973 and 15 Jan. 1974, one or two birds were present on the savanna near Zanderij and a ♂ was collected on 11 Dec. Between 28 Jan. and 25 Feb. 1974, about half a dozen frequented an area of low grass on a house building project in Ma Retraite and Tourtonne plantations near Paramaribo. They sometimes even walked on the sand of newly built streets. A ♂ was collected on 11 Feb.

Columba cayennensis, Pale-vented Pigeon. On 15 Dec. 1973, I found a nest with the usual single egg in a prickly palm near Zanderij.

Aratinga pertinax, Brown-throated Parakeet. Three nests were found by flushing sitting birds from holes in arboreal termite nests on the savanna near Zanderij on 7, 10 and 22 Feb. 1974, but to avoid destroying them their contents were not inspected.

Forpus passerinus, Green-rumped Parakeet. On 14 Nov. 1969, a pair was nesting in a tree-hole near Leonsberg. When the ♀ was inside, the ♂ clung head downwards to the entrance for a long time. The species was noted feeding on sunflower seeds.

Chordeiles acutipennis, Lesser Nighthawk. This is quite a common breeding bird on the savanna near Zanderij. I found three "nests" with the usual single egg on 25 Feb. 1973 and 15 and 20 Jan. 1974, a nestling not yet able to fly on 15 Dec. 1973 and one just fluttering on 28 Dec. 1973. In the last two cases

the ♀ was still in attendance. The December / January nests were rather close together in an area of about 100 × 100 metres. Lesser Nighthawks roost during the day not on the ground but on horizontal branches of trees, often quite a number together in a small area and, at Zanderij, at a distance from their breeding areas. If one is flushed from the ground it is a sign that it has an egg or a nestling. The greyish egg blends perfectly with the sand and is difficult to see. Some years ago the species frequented large gardens with trees in the southern part of Paramaribo, where during 1967, two birds roosted during the day on horizontal branches of a tree in the garden of the Surinam Museum and were present all through the year. To be quite sure of their identity I collected one on 22 April 1967, which proved to be a ♂ in non-breeding condition. A suitable breeding area is not present in the neighbourhood and I have no idea whether or where these birds nested. The possibility exists that they bred on flat roofs of some large houses in the neighbourhood.

Florisuga mellivora, White-necked Jacobin. This hummingbird was extremely numerous in Feb. 1973 and 1974 at the edge of savanna woodland near Zanderij. They frequented the red "flowers" of a liane *Norantea guianensis* (Marcgraviaceae).

Chlorostilbon mellisugus, Blue-tailed Emerald. Quite numerous in Dec. 1972, on an open field near Paramaribo where it frequented the rosy flowers of the dense and low thicket of *Sesamum indicum* (Pedaliaceae), a non-indigenous plant in Surinam. Only adult ♂♂ were seen.

Polytmus guainumbi, White-tailed Goldenthroat. I found two nests of this marsh-loving humming bird on 21 Feb. and 27 Feb. 1974. As usual both were in the fork of a low shrub, not in the least concealed, in knee-deep water of a freshwater marsh near Paramaribo. Neither contained eggs but the ♀♀ sat on the rim of the nest for hours at a stretch. Both nests were still empty on my last visit on 11 March. A nest with two eggs had been found in a similar habitat on 3 Feb. 1968.

From 13 Dec. 1973 to 26 Feb. 1974 a male frequented daily at about 5 p.m. the red flowers of *Russelia equisetiformis* (Scrophulariaceae), a common garden plant in Surinam, in a garden on the outskirts of Paramaribo.

Polytmus theresiae. Green-tailed Goldenthroat. A typical hummingbird of the sandy savannas. As stated in my book there is some wandering into the coastal region during January and February. On 28 Feb. 1973, I captured a female in a garden on the outskirts of Paramaribo.

Dryocopus lineatus, Lineated Woodpecker. An occupied nest-hole was in a dead tree on the road near Powakka from 16 Jan. to 5 Mar. 1974.

Muscivora tyrannus, Fork-tailed Flycatcher. On 20 Jan. 1974, I saw a single bird on an open savanna near Zanderij, which I collected. It proved to be a ♀ in non-breeding condition of the race *monachus*. This is my third record of *monachus* in northern Surinam and the second for January which is a period of the year in which I have never found the nominate race *tyrannus*, which does not as a rule appear before the last part of March and usually in flocks (in 1974 they were not yet present when I left the country in the first days of April).

Renssen (1974) found this species breeding on the Sipalawini savanna in the south of Surinam near the Brazilian border, where he collected a female with a fully developed egg in its oviduct on 17 Jan. 1970. Though he does not mention this, it belonged to the race *monachus* as did a ♂ with greatly

enlarged testes collected by Dr. G. F. Mees in the same area on 31 Jan. 1966. It is interesting that vagrant *monachus* in northern Surinam where they certainly do not nest, have been recorded during the period when the species is breeding in the south.

Megarhynchus pitangua, Boat-billed Flycatcher. On 26 Jan. 1973 and 6 Mar. 1974, I found nests—the usual open cup of sticks—in trees on the savanna at Zanderij, but both were inaccessible.

Myiarchus swainsoni, Swainson's Flycatcher. On 31 Dec. 1972 and again on 6 Feb. 1973, single ♂♂ were collected in savanna bush near Zanderij; I have now seven specimens collected in January, February, July, September, October and December in northern Surinam, none of which were in breeding condition.

Phaeoprogne tapera, Brown-chested Martin. Found nesting on 19 Nov. 1972, in an old nest-hole of the Brown-throated Parakeet (*Aratinga pertinax*) in an arboreal termite nest in a low tree (*Curatella americana*) on a savanna near Zanderij (Fig. 1). The nest, which was lined with a few pieces of dead grass and a few feathers, contained three almost fully fledged nestlings.

Fig. 1. Nest of *Phaeoprogne tapera* in an old nesthole of *Aratinga pertinax* in an arboreal termite nest. Zanderij, 19.xi.72.

Thryothorus leucotis, Buff-breasted Wren. On 19 Dec. 1973 and 18 Feb. 1974, I found nests at about $1\frac{1}{2}$ m height in a prickly palm near Phedra. Each contained two eggs. The nests were untidy elongated balls of dead grasses with a side entrance (Fig. 2) and were lined with the same material.

Fig. 2. Nest of *Thryothorus leucotis* in a prickly palm. Phedra, 18.ii.74.

Mimus gilvus, Tropical Mockingbird. On 5 Jan. 1973, I found a nest with five eggs in a low shrub on a savanna near Zanderij. The usual clutch is only two eggs.

Tangara cayana, Rufous-crowned Tanager. A common breeding bird on the savannas near Zanderij. Three nests were found in low trees (*Curatella americana*) on 18 Jan. and 6 Feb. 1973 (each with two eggs) and on 6 Mar. 1974 (a single incubated egg).

Tachyphonus phoenicius, Red-shouldered Tanager. Common on the savannas near Zanderij where it nests on the ground often at the foot of a small bush. Two such nests each with two eggs were found in short grass on 10 Feb. 1974. The eggs measured: 20 × 15·7 mm (w. 2·7 gr) and 20·7 × 15·5 mm (w. 2·7 gr); 21·4 × 14·8 mm (w. 2·9 gr) and 20 × 16·3 mm (w. 3 gr).

Schistochlamys melanopis, Black-faced Tanager. I am now certain that the nest and eggs attributed to this species in my book were wrongly identified, as the eggs were far too large for this species. On 13 Jan. 1974, I flushed from almost under my feet a bird of this species from its nest on a savanna near Zanderij. The nest was an open cup of dry grasses, lined with the same material, in a low shrub in the grassland about 40 cm above the ground. The two eggs were greyish white thickly covered with dark brown streaks and blotches. They measured 21·8 × 15·8 mm (w. 2·8 gr) and 22·9 x 16 mm (w. 3·1 gr).

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Malimbus ibadanensis: a fresh statement of biology and status

by J. H. Elgood

Received 21st March, 1975

Introduction. Since the account of *Malimbus ibadanensis* as a new species (Elgood 1958) some new data have been obtained that warrant publication. Moreau (1958), in a postcript to his discussion of the evolution of the genus *Malimbus*, regarded the species as very probably valid and dismissed, by inference, a postulated hybrid origin. Hall & Moreau (1962) included *M. ibadenensis* in their study of African rare birds on the grounds of the then very limited area known distribution; rare being defined in this context as applying to those birds occupying an area of less than 3,000 sq. miles (=8,000 sq. km). In their passerine Atlas, Hall & Moreau (1970) allied *M. ibadanensis* with *M. erythrogaster*, known only east of the Niger, to form a superspecies; a view which must be regarded as very probably correct. Mackworth-Praed & Grant (1973), though according it full specific treatment, state that *ibadanensis* occurs only in the immediate neighbourhood of Ibadan and that virtually nothing is known of its breeding habits. This paper presents what is now known of the species and thereby corrects certain aspects and enlarges upon others.

Morphology. In Elgood (1958)'s description the type female was figured with no more than a red throat bridle, but it was stated in the text that field observation had already suggested that other females might have a much wider red area than the one originally collected. All subsequently collected females have, in fact, confirmed this belief: all have possessed a broad red "bib" leaving only a black facial mask similar to that of the male.

The collection of several further specimens makes it possible to tabulate standard measurements as follows:—

	Wing	*Tail*	*Bill*	*Weight*
Type ♂	93 mm	53 mm	21 mm	—
5 further ♂♂	87·6–99·0	52·3–55·8	20·8–22·5	39·9–43·5g
Type ♀	90	53	20	—
6 further ♀♀	84·7–90·0	50·3–54·4	19·8–21·5	33·1–39·4g

It is clear that the male is slightly larger and heavier than the female.

Range and Status. The species has now been reliably reported from the following localities:—

Ife, 70 km east (and slightly north) of Ibadan	—mistnetted; breeding
Olokemeji, 40 km almost due west of Ibadan	—sight record
Ilaro, 110 km south-west of Ibadan	—breeding
Iperu, 60 km south-south-west of Ibadan	—sight record

These localities suggest an area of occupancy for the species in excess of 12,000 sq. km, some 50% greater than that quoted by Hall & Moreau (1962) in their definition of a "rare" species. In 60 visits to Gambari Forest, 25 km south of Ibadan, the species was encountered 11 times (Elgood, in press) showing it to be locally not uncommon. This comparative frequency made the collection of additional specimens feasible.

All recent observation suggests that the species is best described as a forest edge species, despite the original specimens having been collected in

an Ibadan garden. Elgood & Sibley (1964) regarded Ibadan as located at the interface of forest and savanna and the species has been somewhat incorrectly called a bird of open country (Mackworth-Praed & Grant 1973). With the exception of Ife all the new localities are in forested areas southward of Ibadan and there is more relict forest around Ife than around Ibadan. There is therefore no real case for regarding *ibadanensis* as markedly less of a forest species than its congeners. Unless one follows White (1963) in placing "*Anaplectes melanotis*" within the genus *Malimbus*, all other *Malimbus* spp. are forest birds. It may be remarked that the potential range of the species is likely to be limited longitudinally by the lower Niger River and the Dahomey Gap, some 500 km apart; its known latitudinal limits amount to about 120 km, so that it could occupy an area of about 60,000 sq. km.

Breeding. There have been two series of observations of breeding activity that have considerably extended our knowledge: the first at Ibadan where observation was started by myself and continued after my departure on annual leave by the late W. M. L. Bispham, formerly of Ibadan University; the second at Ilaro, where important observations were made by J. A. Button, at that time teaching at Egoado College, Ilaro. Both nesting activities were subjected in all to many hours of observation.

Significant Ibadan observations can be summarised thus:—

Two contiguous nests, being built by the same male, were noted in a large *Albizzia* sp. tree. The nests were inaccessible near the tip of one of the lowest branches, at a height of about 15 m from the ground. Three other unoccupied nests were adjacent: two were clearly those of other ploceids, the third probably that of an estrilidid (?*Nigrita* sp.). Very close to the *ibadanensis* nests was an active nest of the wasp *Polistes* sp.

16 June 62	(the date of discovery): one nest was globular, the egg chamber alone constructed, the other had a short entrance tunnel; ♂ seen to work on both nests, adding to the fabric of the egg chamber of the first and extending the entrance tunnel of the second.
19 June:	♀ seen lining the second now clearly selected and more advanced nest.
25 June:	utilized nest now had an entrance tunnel 20–25 cm long; in early afternoon ♀ remained so long in the nest (around ½ hour) that laying was inferred.
11 July:	both ♂ and ♀ carrying food into the nest; sounds of hatchling just audible, (subsequently these noises suggested more than one young).
25 July:	both sexes still feeding young; entrance tunnel had become very ragged, almost detached from the egg chamber; adults now entered the egg chamber directly through a hole in the base of the tunnel and not along its length.
26 July:	head of a juvenile visible in remains of the tunnel base.
27 July:	no sign of birds, either adults or juveniles.

These data suggest incubation and fledgling periods of about two weeks each, as would be expected for passerine birds of this size. The other nest was worked on sporadically by the ♂ throughout incubation, until feeding demands of the fledglings occupied him fully. Possibly it might have been called into use had nesting activity been unsuccessful in the main nest—in short, a reserve nest.

The main Ilaro observations are summarised below:—

25 June 65:	nest under construction noted in small dead tree at 10 m from ground.
27 June:	egg chamber completed, ♂ extending entrance tunnel, ♀ within egg chamber, lining it with material passed in to her by ♂.
5 July:	♀ within egg chamber for protracted period—laying inferred.
26 July:	young in nest being fed by parents; attempt to reach nest foiled when observer was stung by unidentified flying hymenopterous insects.
3 Sept.:	activity resumed at same nest, ♂ repairing it; second brood inferred.
4 Sept.:	Despite attention of hymenopterous insects, the nest was successfully investigated; ♀ brooding a single egg (23 mm × 15 mm, pale greenish white ground colour, sparingly marked with small irregular spots of dark brown with a few lilac shell markings, embryo already half developed).

No exact information is available on the materials of nest construction but the Ibadan birds were seen to strip Oil Palm leaves in the manner familiar in *Ploceus cucullatus*. Tendrils of some climbing plant were also utilised, possibly from *Paullinia pinnata*, which is known to form much of the main fabric of the nest ot *Malimbus rubricollis* in the Ibadan area.

A nest of *ibadanensis* has also been noted at Ife (R. Farmer, pers. comm.) with an entrance tunnel of more than 30 cm, though this is still rather shorter than that of *M. scutatus*, which may reach 50 cm. Clearly the nest is of the type described by Crook (1960) as "retort shaped".

There are many records of family parties with two juveniles. Clearly clutch size can be c/1 or c/2. In comparison with other Ploceidae it is likely sometimes to be c/3, but so far this has not been demonstrated.

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IN BRIEF

Lesser Crested Tern *Sterna bengalensis* in Gambia

In Janaury 1974, a party of Danish ornithologists watched about 25 birds of this species at Cape St. Mary, as they fed in company with *S. sandvicensis*. Both species were also seen resting on a sandbank with *Hydroprogne tschegrava*, *Sterna maxima* and *S. albifrons*. They were seen later in the season by other

Danish and also Swedish parties, the latter noting two off the coast at Kartung near the border with Casamance. So they apparently stayed all winter. Returning in November/December 1974, we again met Crested Terns at Cape St. Mary, accompanied by the same species as previously plus one addition (a few *Gelochelidon nilotica*).

It therefore seems likely that Gambia is a regular wintering area, though the species was not mentioned by Praed & Grant (*Birds of West Central and Western Africa*. Vol. 1, Longmans, 1970). Vaurie (*Birds of the Palearctic Fauna* Vol. 2, Witherby, 1965) described *bengalensis* as a scarce breeding bird in Tunisia and Libya and this was repeated by Etchécopar & Hüe (*Birds of North Africa*, Oliver & Boyd, 1967), who added that the winter quarters of this population were unknown. The observations in successive winter seasons on the Gambian coast, where the presence of the species had previously been overlooked, may therefore provide the answer.

19 February 1975 Bent Pors Nielsen

A downy chick of the Little Crake *Porzana parva* taken in Spain, with notes on its diagnostic features

by J. Fjeldsa

Received 22nd March, 1975

In our collections at the Zoological Museum of Copenhagen, we possess a specimen of a downy chick labelled "*Porzana pusilla*, Las Marismas, Spain, 7 June 1967", which on examination has proved to be *Porzana parva*. This is of particular interest since, although Jourdain, who visited the Marismas in 1906–07, supposed that *parva* was breeding, he had no proof; Dr. J. A. Valverde doubted whether the supposition was correct. In recent years, the species has only been seen occasionally in Spain during the breeding season, in contrast to Baillon's crake *P. pusilla*, which is a regular if not numerous breeding species.

The Copenhagen specimen was collected by Mr. Ib Trap-Lind from the nestsite of a barn owl *Tyto alba* in a farmhouse near the marshes. Also found at the site were the corpses of 11 adult Baillon's crakes, three decomposed crake-chicks, the fresh chick collected, four larger chicks probably of moorhens, a passerine bird, seven rodents, a frog and a lizard. The chick collected was assumed to be *pusilla* on the basis of the eleven adults of that species at the nestsite (Trap-Lind pers. comm.).

The chick was preserved in alcohol but has now been freeze-dried. It may be a fortnight old, being 85 mm in length with a 22 mm tarsus. The down is plain black with a slight green lustre, more seal-brown on the belly. Feathers emerging under the down on the thighs are creamy with a pale drab tip. The down is sparse and bare skin is visible around the ears, lower eyelid and hind-crown. Only the distal third of the 9·4 mm bill is curved dorsally and its colour is pinkish white with a more vinaceous grey tip; the corner of the mandible, the proximal third of the lower mandible and the keel as far as the gonys are blackish. The feet are deep brownish drab. Soft part colours were not noted at the time of collection.

These features correspond quite well with those of one skinned specimen of *parva* examined, with Plate 5 in Glutz von Blotzheim *et al.* (1973), which

was based on live and freshly dead specimens and colour transparencies, with a colour plate and six photographs of chicks of varying ages in Heinroth & Heinroth (1931), and with descriptions and drawings in Szabo (1970). Some differences must nevertheless be noted, as well as the much more marked differences from the skins of the two *pusilla* chicks examined.

Thus the down on the anterior crown and above the eyes of the chick is very dense, as shown in Glutz von Blotzheim's Plate. The bill is longer than that of Baillon's chicks which, according to Szabo, have a strikingly short, strongly curved, bony white bill with, at most, some slight grey shade at the corner. Similarly the bill is described by Glutz von Blotzheim as white or wax-yellow and no indication is given in his text or Plate of a darker coloration at the base of the bill; not is there any sign of it in the two skins of *pusilla* which I studied. On the other hand, the bill of the young *parva*, which is at first creamy or pinkish white, becomes gradually greyer with a black base; in the illustrations of all three of the works quoted this dark coloration is indicated and can also be seen in the *parva* skin examined.

A further point of difference, as indicated by Glutz von Blotzheim (*op. cit.*, Plate 4, p. 435–6) is that the white thigh feathers in the first juvenal plumage of *pusilla* already show fuscous black, irregular, transverse mottling. This is lacking in the specimen under discussion, in which the thigh feathers have a much lighter and unvariegated appearance: I do not believe that this can be attributed to changes caused by the preservation of the chick in alcohol, since no such changes can be detected in other specimens preserved in that way.

Finally, I should perhaps mention that the first primary has not yet emerged in the specimen, which is a pity since the shaft colour of this feather is diagnostic. Also, the chicks of other rails, known to breed in the area where the specimen was collected, can be definitely ruled out: at the age at which it is similar in size a water rail *Rallus aquaticus* chick has a much longer bill with a black tip, and that of the Spotted Crake *Porzana porzana* is completely different in colour (as will be shown by Fjeldsa, in. prep., Plate 18). The conclusion that the 1967 specimen is attributable to *Porzana parva* and indicates at least occasional breeding of the species in the region of the Marismas, is therefore now beyond doubt.

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Passerine bird weights from Panama and Colombia, with some notes on 'soft-part' colours

by P. J. K. Burton

Received 29th March, 1975

This paper is the sequel to an earlier one (Burton 1973) which detailed the weights of non-passerine birds collected during the British Trans-Americas Expedition, 1971–72. For convenience, details of methods and locality co-ordinates are repeated here.

The specimens were all preserved in fluid as anatomical material. Most have been left intact, and for these sex is given only for species showing clear cut sex differences in external features. In a few cases, specimens have been sexed by dissection; this is indicated in the text by the abbreviation "diss".

All weights were taken immediately after death using Pesola balances, and are given in grammes. "Soft part" colours were also recorded immediately after death, and these are given in the case of species for which adequate details are not available in the literature. The majority of these are oscines, as the soft-part colours of most sub-oscines are thoroughly covered by Wetmore (1972).

Subspecific identities are mentioned in a few cases where they appear to be of particular relevance. A few of the birds included are wintering nearctic species. In all 286 weights of 92 species are listed.

Co-ordinates for the localities mentioned are as follows: C.I.M. (Military Instruction Centre, near Pacora), 9° 8′ N. 79° 15′ W.; Rio Espave (Bayano Valley) 9° 15′ N., 78° 45′ W.; La Palma, 8° 24′ N., 78° 9′ W.; Jaque, 7° 29′ N., 78° 7′ W.; Rio Jaque, 7° 30′ N., 78° 5′ W.; El Real, 8° 7′ N., 77° 45′ W.; Pinogana (Rio Tuira), 8° 8′ N., 77° 39′ W.; Boca de Paya (Rio Tuira), 7° 56′ N., 77° 32′ W.; Rio Paya, approximately 7° 56′ N., 77° 27′ W.; Cerro Pirre, 7° 57′ N., 77° 45′ W.; Sautata (lower Atrato valley), 7° 51′ N., 77° 8′ W.; Cienagas de Tumarado (Atrato swamp), approximately 7° 50′ N., 76° 58′ W.; Rio Perancho (Atrato swamp), approximately 7° 43′ N., 77° 10′ W. The three last localities are in Colombia, the remainder in Panama.

Dendrocincla fuliginosa: 38, 40, 44, 47, Rio Espave, January.

Dendrocincla homochroa: 48, Rio Espave, January.

Deconychura longicauda: 22, Rio Espave, January.

Glyphorhynchus spirurus: 14·2, 14·3, Rio Espave, January; 14·5, Jaque, February; 11·8, 13·0, 13·2, 14·0, Cerro Pirre, March.

Xiphorhynchus picus: 40, Rio Perancho, March.

Xiphorhynchus guttatus: 51, C.I.M., January; 41, 52, Rio Espave, January; 47, 52, El Real, February/March. The races of this widely distributed species vary considerably in size. These records refer to the race *X. g. nanus*.

Lepidocolaptes souleyetii: 23·8, 25·0, 26·2, Boca de Paya, February.

Campylorhamphus trochilirostris: 36, 38, Rio Espave, January.

Hyloctistes subulatus: 35, March 14th, Cerro Pirre. This specimen has been provisionally determined by R. de Schauensee as *H. s. cordobae*, a race known only from a small number of specimens taken in Darien and North-western Colombia. Cerro Pirre is a new locality for the species, whose other race in Panama (*H. s. virgatus*) is only known from the western half of the Republic.

Xenops minutus: 11·0, Rio Espave, January.

Sclerurus guatemalensis: 30·0, 32·0, Rio Espave, January; 36·0, Jaque, February; 29·0, Cerro Pirre, March.

Taraba major: 65 (♂), 64 (♀), El Real, March.

Thamnophilus nigriceps: ♂♂ 21·8, 22·8, ♀♀ 21·8, 21·9, Rio Espave, January; ♂ 23·0, ♀ 26·2, El Real, February/March. The ♂ from El Real had the iris very dark brown, bill entirely black, bill lining grey, mouth and tongue pink, tarsus, toes and claws blue-grey, buffish on the underside of the toes.

Thamnophilus punctatus: ♂♂ 21·0, 22·0, 26·3, ♀ 22·0, Rio Espave, January; ♂ 24·3, Jaque, February; ♂ 20·0, Boca de Paya, February; ♀ 21·0, Cerro Pirre, March.

Myrmotherula surinamensis: ♂ 10·0, Boca de Paya, February.

Myrmotherula fulviventris: ♂ 10·0, ♀ 7·6, Rio Espave, January; ♀♀ 8·0, 9·2, Cerro Pirre, March. The ♀ from the Rio Espave had the iris dark brown; Wetmore (1972) records a light orange iris for a ♀.

Myrmotherula axillaris: ♂ 8·0, Rio Espave, January; ♂ 7·0, Cerro Pirre, March.

Gymnocichla nudiceps: ♂♂ 32, 33, 35, imm. ♂ 27·9, ♀♀ 27, 28, 31, Rio Espave, January; imm. ♀ 21, Boca da Paya, February. A female from the Rio Espave had the bare skin around the eye pale cobalt blue, bill black, with the tomia grey distally, bill lining greenish, shading to orange inside the mouth, tongue greenish anteriorly and orange at the base, legs and feet grey.

Myrmeciza exsul: ♂♂ 24·8, 26·3, 28, ♀♀ 24, 27, Rio Espave, January; ♂ 22·5, ♀ 28, Cerro Pirre, March. The birds from the Rio Espave belong to the subspecies *M. e. niglarus*, and those from Cerro Pirre are *M. e. cassini*.

Gymnopithys bicolor (=*leucaspis;* see Wetmore 1972): 27·4, 27·8, 28, 28, 29, 31, Rio Espave, January; 25·7, 26, 29, 29, Cerro Pirre, March.

Hylophylax naevioides: ♂ 15·8, ♀♀ 16, 16·2, Rio Espave, January; ♂ 15·9, Cerro Pirre, March.

Phaenostictus mcleannani: 46, Rio Espave, January; 44, 42, Cerro Pirre, March.

Formicarius analis: 60, 60·0, Rio Espave, January.

Grallaria perspicillata: 37, Cerro Pirre, 11th March.

Attila spadiceus: 35, 36, 37, 45, Rio Espave, January; 36, Cerro Pirre, March.

Pachyrhamphus cinnamomeus: 20, 20·5, Rio Espave, January; 21, Boca de Paya, February; 20·3, El Real, March.

Tityra semifasciata: 71, Boca de Paya, February.

Querula purpurata: ♀, 94, Rio Espave, January; ♂ 122, Jaque, February; ♂ 111, El Real, March; ♀ 101, Cerro Pirre, March.

Pipra mentalis: ♂♂ 13·4, 15·5, imm. ♂ (diss.) 12·8, ♀ (diss.) 14·0, Rio Espave, January. This appears to be the most easterly locality recorded for the species in the Bayano valley, although its range may extend somewhat further east on the Caribbean and Pacific slopes. It is absent from Darien proper.

Pipra erythrocephala: ♀ (diss.) 10·9, Cerro Pirre, March.

Pipra coronata: ♂ 8·8, ♀♀ (diss.) 10, 10·3, 11·2, Jaque, February. A female had the iris deep red, maxilla dark grey, paler along the tomium, mandible paler grey, inside mouth and tongue pink, tip of tongue yellowish, legs and feet dark grey, undersides of toes paler, brownish.

Chiroxiphia lanceolata: ♂ 20·5, C.I.M., January.

Corapipo altera (see Wetmore 1972): ♂ 9·5, ♀ (diss.) 13·5, Cerro Pirre, 11th March. The ♀ had an almost fully formed egg in the oviduct.

Manacus vitellinus: ♀ 16, Rio Espave, January; ♂ 13·8, Jaque, February.

Colonia colonus: 14·7, Rio Espave, January; 16·5, Boca de Paya, February.

Fluvicola pica: 15·8, Cienagas de Tumarodo, March.

Sirystes sibilator: 32, Cerro Pirre, March.

Muscivora tyrannus: 26·7, 27·0, 27·2, 28·3, 28·9, 31·0, C.I.M., January.

Myiodynastes maculatus: 40, 42, 43, El Real, February.

Megarhynchus pitangua: 67, Rio Jaque, February.

Myiozetetes cayanensis: 25·7, 25·8, Rio Espave, January; 28, El Real, March.

Myiarchus ferox: 34, Rio Perancho, March. See Burton (1973).

Terenotriccus erythrurus: 6·3, 6·8, Rio Espave, January.

Myiobius atricaudus: 10·2, Rio Espave, January.

Onychorhynchus mexicanus: ♀ 20, Rio Espave, January.

Platyrinchus mystaceus: 8·2, 8·8, Cerro Pirre, March.

Rhynchocyclus olivaceus: 19·8, 21, 21·2, 23, Rio Espave, January.

Oncostoma olivaceum: 5·9, El Real, March.

Mionectes olivaceus: 13·5, 14·4, 15·0, 15·2, 16, Rio Espave, January; 14·8, 15·2, Cerro Pirre, March.

Pipromorpha oleaginea: 9·2, 9·6, 9·8, 9·9, 10·6, 11·8, Rio Espave, January.

Progne chalybea: ♂♂ 44, 40, C.I.M., January.

Cyanocrocorax affinis: 194, C.I.M., January; 222, Rio Espave, January; 203, El Real, March.
Soft part colours recorded for one specimen are: iris pale yellow; bill black, inside mouth pale pink, tongue orange; legs, feet and claws dark grey, underside of toes dull yellowish. In another specimen, the colours were the same, but inside the mouth was dull grey, and the tongue was pink.

Thryothorus fasciatoventris: ♂ (diss.) 28, Rio Espave, January; ♀ (diss.) 21·4, El Real, March. The male had the iris rufous brown, maxilla black, mandible grey, the tomia of both dull pink, inside mouth grey, the tongue black with white edges, legs feet and claws dark grey, the underside of the toes dull yellow.

Thryothorus nigricapillus: 23·8, Rio Espave, January; 19, 21·5, 21·8, Jaque, February; 17·7, 22, Boca de Paya, February. The specimen from Rio Espave had the iris very dark brown, maxilla black, mandible greenish-grey, yellow at the base, legs and feet lead grey, claws brown-grey, underside of toes pale brown.

Thryothorus leucotis: ♂♂ 18·0, 20·6, 20·8, 23, ♀♀ 16·0, 17·0, 19·5, El Real, March.

Troglodytes aedon: 14·0, 14·0, 14·0, 14·2, C.I.M., January.

Henicorhina leucosticta: 15·2, Cerro Pirre, March.

Donacobius atricapillus: ♂ (diss.) 42, ♀♀ (diss.) 31, 34, Santata, March.

Ramphocaenus melanurus: 9·0, Rio Espave, January; 11·0, Jaque, February. The bird from Rio Espave had the iris dark brown, bill dark brown, but paler, flesh-coloured, on the tomia and gonys, and at the base. The linings of maxilla and mandible were violet grey, tongue and inside of mouth pink, tarsus and toes slate grey, claws pinkish grey, the undersides of the toes pale green.

Polioptila plumbea: 5·9, C.I.M., January. Iris very dark brown, bill black, basal half of the mandible dark blue-grey, tarsus and toes very dark grey.

Anthus lutescens: 13·0, 13·5, C.I.M., January. One specimen had a dark brown iris, bill brownish grey with pale pink tomia and mandible base, tarsus and toes pale yellowish brown.

Scaphidura oryzivora: ♂♂ 227, 228, 233, 242, ♀♀ 156, 167, Pinogana, February.

Zarhynchus wagleri: ♂ 206, La Palma, February; ♂ 229, El Real, February.

Psarocolius decumanus: ♂ 320, El Real, March; ♂ 370, Cerro Pirre, March; ♀ 174, Rio Espave, January. The female had the iris bright cobalt, bill cream, inside mouth and tongue pale pink, tarsi and toes black, the undersides of the toes pale olive.

Gymnostinops montezuma: ♂ 430, ♀, 254, Rio Paya, February; ♀ 210, El Real, March. The male from Rio Paya had the iris medium brown, bill black with vermilion tip, lining of maxilla and mandible also black with vermilion tip, inside mouth black, tongue pale grey, frontal shield vermilion, bare orbital skin and wattles bright cobalt blue, tarsi and toes black, the soles pale dirty brown. The female from the same locality had similar soft part colours, but the palate was somewhat paler than the rest of the jet black mouth and bill lining, and the frontal shield was duller.

Cacius cela: ♂♂, 119, 121, El Real, March.

Cacicus uropygialis: ♂, 61, Rio Jaque, February. Iris pale blue, bill pale yellow, lining of maxilla and mandible yellow, inside mouth blue grey, tarsi, toes and claws black, underside of toes dark olive.

Cassidix mexicanus: ♀, 119, La Palma, February.

Icterus spurius: 1st year ♂, 20·7, El Real, March.

Icterus chrysater: ♂♂ 42, 43, Rio Espave, January. Iris dark brown, bill black, the basal third of the mandible pale grey, inside mouth and tongue pinkish grey, tarsi and toes blue grey, underside of toes pale olive buff.

Leistes militaris: ♂♂, 43, 45, 46, 46, ♀ 37, El Real. February/March.

Protonotaria citrea: 12·7, Jaque, February; 13·5, Boca de Paya, February; 12·4, El Real, March.

Vermivora peregrina: 7·5, Jaque, February.

Dendroica castanea: 10·8, Rio Espave, January.

Seiurus noveboracensis: 16·0, Rio Espave, January; 13·5, 14, 15·2, Boca de Paya, February; 13·2, 14·3, 15·3, El Real, February/March.

Oporornis formosus: 13·5, Rio Espave, January.

Oporornis philadelphia: 9·5, 9·6, 9·7, 9·8, 10, 10, El. Real, February/March.

Basileuterus rivularis: 12·5, 13·6, 15·8, Boca de Paya, February; 14·0, 15·3, Cerro Pirre, March.

Chlorophanes spiza: ♂ 17·8, Jaque, February. Iris deep red, bill yellow, black along the culmen, and to below the nostril at the base of the maxilla. Bill lining yellow, inside mouth pinkish grey, tongue yellow, dull pink at the base. Tarsi and toes grey, undersides of toes olive buff.

Ramphocelus dimidiatus: ♂♂, 23·8, 24·8, 25·7, ♀♀ 24·2, 26·8, 26·8, El Real, February/March.

Ramphocelus icteronotus: ♂ 35, Rio Espave, January; ♀ 31, El Real, March.

Chlorothraupis olivacea: 36, 39, 41, Cerro Pirre, March. A specimen had the iris burnt sienna, maxilla black with blue grey tomium and lining, mandible and its lining blue grey, inside mouth and tongue dull pink, tarsi and toes lead grey, claws grey, tipped whitish, undersides of toes olive green.

Tachyphonus luctuosus: ♂ 13·8, El Real, March.

Eucometis penicillata: 31, Rio Espave, January.

Mitrospingus cassinii: 37, 39, Jaque, February; 32, 37, Cerro Pirre, March. A specimen from Jaque had pale grey iris, maxilla almost black, with pale tomium, mandible paler, greyish, bill linings, inside mouth and tongue grey, tarsi and toes dark grey, undersides of toes dirty buff.

Saltator maximus: 43, 44, El Real, March.

Saltator albicollis: 37, Rio Espave, January.

Cyanocompsa cyanoides: ♂♂ 28, 29, 31, 32, ♀♀ 28, 29, 31, Rio Espava, January; ♂♂ 26, 28, Cerro Pirre, March.

Passerina cyanea: ♂♂ 26, 28, Cerro Pirre, March.

Sporophila americana: ♂♂ 9·5, 9·5, 10·0, ♀ 10·5, C.I.M., January; ♂♂ 10·0, 10·0, El Real, March.

Oryzoborus angolensis: ♀♀ 11·7, 13·8, C.I.M., January; ♂ 11·8, El Real, March.

Arremon aurantiirostris: 29, 30, Rio Espave, January; 33, Jaque, February; 31, Boca de Paya, February.
A specimen from Rio Espave had a brown iris, bill bright coral-red, inside mouth and tongue pink, tarsi and toes pink, undersides of toes paler, inner and hind claws orange, middle and outer claws brownish.

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The Garganey *Anas querquedula* in Rhodesia

by Peter F. Woodall

Received 11th April, 1975

The Garganey, *Anas querquedula* Linnaeus, is a Palaearctic migrant which breeds from the Atlantic to the Pacific and is highly migratory, partly to southern Asia but also in very large numbers to Africa. In West Africa, north of about 13° N, it is very common and widespread; in the east few penetrate south beyond morthern Tanganyika (Moreau 1972: 221).

A female Garganey (weighing 357 g) was collected on 11 November 1973 from a large dam at United Farm, 17° 51′ S., 30° 50′ E., near Salisbury. Large numbers of other waterfowl, mainly Red-billed Teal *Anas erythrorhyncha*, Knob-billed Duck *Sarkidiornis melanotos* and White-faced Tree Duck *Dendrocygna viduata* were also present. No other Garganey were seen, but they could have been overlooked if in small numbers. Although Garganey have been shot before in Rhodesia (Kennedy 1947, Smithers 1950), this is apparently the only Rhodesian specimen extant. It is now in the National Museum, Bulawayo and substantiates sight records of Garganey made elsewhere in Rhodesia in the 1973–74 season (Irwin 1974, Vernon 1974).

Irwin (1974), reporting the first material record of Pintail *Anas acuta* for Rhodesia, suggested that some Palaearctic duck may have been forced south of their present normal wintering grounds by the progressive series of droughts in the northern semi-arid savanna belt (Sahel) of Africa (Winstanley 1973). Reports of Garganey from Rhodesia would seem to support this suggestion.

TABLE

Records of Garganey in Rhodesia and rainfall in the Sahel

Reference	*Season*	*Locality*	*Mean % of normal rainfall in the Sahel**
Kennedy (1947)	1945/46	Gwebi Flats, nr. Salisbury	70
Smithers (1950)	1948/49	M'Phoengs, Bulalima Mangwe	60
Smithers (1950)	1948/49	Halsteads Ranch, Bembesi	60
Brooke (1974)	1952/53	Borrowdale, Salisbury	130
Talbot (1970)	1969/70	Aisleby, Bulawayo	75
Tree (1973)	1972/73	Lake McIlwaine, Salisbury	65
Tree (1973)	1972/73	Rainham Dam, Salisbury	65
Irwin (1974)	1973/74	Portwe Estate, nr. Turk Mine	—
Vernon (1974)	1973/74	Sable Park, nr. Que Que	—
this record	1973/74	United Farm, Salisbury	—

* Rainfall data (estimated to the nearest 5 %) have been taken from Winstanley *et al.* (1974) who presented a graph showing the mean percentage of normal (1931–60) May–October rainfall at Nouakchott, Atar (Mauritania, Gao, Tessalit (Mali), Agades (Niger), and Khartoum (Sudan) representing the Sahel region, south of the Sahara. Comparable figures were not available for 1973, but Winstanley (1974) indicates that it was again well below normal in this region.

A summary of literature records is presented in the Table and in general there seems to be a fairly good correlation between low rainfall in the Sahel region and the presence of Garganey in Rhodesia. It is particularly striking that the early records from 1945/46 and 1948/49, both coincide with nadirs in the rainfall. The 1950s were periods of above average rainfall in the Sahel, so Brooke's (1974) record for 1952/53 must be regarded as an exception to this suggestion. Rainfall in the early 1960s fluctuated about the normal level but since 1968 it has been consistently below normal and this corresponds with the more recent Garganey records. Other factors such as the rainfall pattern in Rhodesia itself should probably be taken into account but, in view of the limited number of records available, the more simple correlation seems adequate.

The majority of records are of one or two birds, but Kennedy (1947) cited the Hon. T. H. W. Beadle who saw, "four flights, each 150–200 strong" at

the time he collected the specimens. Dowsett (in a footnote to Irwin [1974]) reported more that 100 Garganey from Lochinvar, Zambia, in 1973/74, so on some occasions larger numbers will come this far south.

Smithers *et al.* (1957: 32) and Clancey (1967: 49) suggested that Garganey might be regular annual visitors in small numbers to southern Africa. However, there seems to be no evidence for its regular occurrence and it seems unlikely that this species would have been unreported for over a decade from Rhodesia at a time of increasing wildfowl counts and observations.

I am very grateful to Mr. R. Beale for allowing me to attend his shoots and for presenting this specimen to the National Museum of Rhodesia; to Mr. M. P. S. Irwin, who provided valuable assistance; and to Dr. T. K. McCarthy for criticising a draft of this paper.

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British Ornithologists' Club

Edited by

HUGH F. I. ELLIOTT

Volume 95 No. 3 September 1975

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Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 95 No. 3 Published: 20 September, 1975

The six hundred and ninety-fifth meeting of the Club was held at Imperial College, London, S.W.7, at 7 p.m. on Tuesday 15th July 1975 with a buffet supper.

Chairman: Prof. J. H. Elgood; present 12 members and nine guests.

Mr. R. S. R. Fitter spoke on "The work of the Survival Service Commission and the problem of extinction" and an interesting discussion followed.

Forthcoming Meetings:

Tuesday, 18th November 1975, Senior Common Room, **South Side,** Imperial College, South Kensington; entrance—south side of Prince's Gardens, S.W.7. (off Exhibition Road and N. of Victoria & Albert Museum) at 6.30 p.m. for 7 p.m.; Patrick J. Sellar on "An Ornithological selection from the new British Library of Wildlife Sounds", illustrated by tape recordings. Dinner, cost £3·25 (including service and V.A.T.); cheques should be sent to the Hon. Secretary before the meeting.

Tuesday, 20th January 1976 at 6.30 p.m. for 7 p.m. Dr Janet Kear will speak on "Living Museums (zoos) are worthwhile; but are re-introductions to the wild?"

Tuesday, 16th March 1976 at 6.30 p.m. for 7 p.m. Dr. C. J. O. Harrison will speak on "Eggs".

The May meeting will be the seven-hundredth meeting of the Club and there will be a short symposium on African birds.

The attention of members is drawn to the change of place for the meeting on 18th November 1975. The venue for the 1976 meetings will be announced later.

Annual General Meeting

The eighty-third Annual General Meeting of the British Ornithologists' Club was held at the Café Royal, 68 Regent Street, London, W.1, on Tuesday 20th May 1975 at 6 p.m. with Prof. J. H. Elgood, M.A., in the chair. Twelve members were present.

The minutes of the eighty-second Annual General Meeting (*Bull. Brit. Orn. Cl.* 94: 41–42, 129) and of the Special General Meeting held on 19th November 1974 (*Bull. Brit. Orn. Cl.* 94: 132) were approved and signed.

The Chairman presented the Report of the Committee for 1974 and the Hon. Treasurer presented the Accounts for 1974. The Hon. Treasurer explained that the amount of income tax recovered was about double that which would normally be received, as in 1974 the sums due in respect of two years had been received. Subscriptions received in 1974 included substantial amounts in respect of previous years and the sales of back-numbers of the *Bulletin* were abnormally large. The surplus on the year of £434 was, unfortunately, attributable solely to these exceptional factors.

The Editor reported that the supply of good papers from all parts of the world had been keeping up well. The time from receipt of a paper to publication was currently three to six months.

On the proposal of the Chairman, the Report and Accounts were received and adopted unanimously.

The Chairman thanked Sir Hugh Elliott for his services as Editor and for handling the stock and sales of back-numbers of the *Bulletin*.

There being no nominations additional to those of the Committee, the following were declared elected:—

Editor: Dr. J. F. Monk, D.M. (*vice* Sir Hugh Elliott, from whom he will take over at the end of the year).

Hon. Secretary: Mr. R. E. F. Peal (re-elected).

Hon. Treasurer: Mr. M. St. J. Sugg (re-elected).

Committee: Mrs. J. D. Bradley and Mr. C. E. Wheeler (*vice* Mr. C. J. Mead and Lieut. Col. J. R. Neighbour).

The following resolutions to amend the Clubs' Rules, proposed by the Committee as special resolutions, were considered and were passed unanimously:—

Resolution 1

That Rule (4) be hereby amended by the deletion of the first two sentences and the substitution in place thereof of the following sentences:—

Any member of the British Ornithologists' Union may become a member of the Club on payment to the Treasurer of the annual subscription. The first subscription of a Member who joins in October, November or December shall cover his membership until 31st December in the following year. The rate of subscription for Members shall be decided by the Committee. A Member who ceases to be a Member of the British Ornithologists' Union shall also cease to be a member of the Club unless the Committee shall consider it is in the interests of the Club to permit him to remain a Member of the Club.

Resolution 2

That Rule (10) be hereby amended by the deletion of the words:—

as soon as possible after each Meeting.

Resolution 3

That Rule (12) be hereby deleted and in place thereof the following Rule be hereby adopted:—

(12) **Subject to the terms of any bequest or gift, any stocks, shares, other securities, money or other property (whether real or personal) from time to time belonging to the Club may be vested in trustees for the Club if the Club shall by a special resolution so decide. Such special resolution shall appoint Trustees and shall specify the trusts under which the property is to be held.**

The meeting closed at 6.25 p.m.

Cotyle paludibula Rüppell, 1835

by R. K. Brooke

Received 3rd April, 1975

In 1835, Rüppell proposed the binomen *Cotyle paludibula* in his *Neue Wirb. Fauna Abyssinien* on p. 106, with a type locality in the Gondar Province of Ethiopia. He again used the name in his, 1845, *Syst. ubers. Vog. N.-O. Afrika*'s p. 25. It has not been used since in his sense. In 1862, Heuglin used the name in *Journ. f. Orn.* 10: 38, where it is a junior subjective synonym of *Riparia riparia riparia* (L.). Sharpe & Wyatt (1894, *Monogr. Hirund.* p. 1) said that Rüppell's *C. paludibula* was a lapsus for *Hirundo paludicola* Vieillot, 1817, and that Cabanis's *Cotyle minor* (1850, *Mus. Hein.* 1 : 49) with type locality northeastern Africa, subsequently restricted to Dongola, Sudan, by Reichenow (1920, *Journ. f. Orn.* 68: 88), was the proper name for the northeast African subspecies of *Riparia paludicola* (Vieillot). This view has been followed ever since by those who have mentioned the African subspecies of *R. paludicola.*

However, it seems clear from Rüppell's re-use of his *paludibula* that its creation was deliberate and that it cannot be dismissed as a lapsus. It is the earliest available name for the subspecies usually known as *minor* of Cabanis and it should be restored and used by those who have occasion to mention this sub-species of *R. paludicola.*

It would be possible to seek the formal suppression of *paludibula* on the grounds that it has not been used for over 50 years, but I do not consider that priority should be dispossessed by stability in the case of subspecific names of interest only to a few specialists perfectly capable of understanding and replacing a junior name by its senior synonym. The position is different where a subspecific name has been used in more than one sense and confusion would be caused by its use in a new sense. Stability of specific and generic names is of interest to a greater number of zoologists and others than is stability of subspecific names and in such cases it may indeed be undesirable to replace a well known name by its senior synonym.

As for the genus *Cotyle* Boie, 1826, I have pointed out (1974, *Durban Mus. Novit.* 10(9): 133) that its genotype is *Hirundo fucata* Temminck of South America and that this species is also the genotype of *Alopochelidon* Ridgway, 1903. I have since applied to the International Commission for the supression of *Cotyle* Boie, 1826, on the grounds of disuse and confusion with *Cotile* Boie, 1822, with genotype *Hirundo riparia* L. This will have the effect of conserving *Alopochelidon* which has been widely used in the South American literature.

I consider that in future the northeast African populations of the Brown-throated Sand Martin should be referred to as *Riparia paludicola paludibula* (Rüppell) 1835, not as *R. p. minor* (Cabanis) 1850.

The avian type-locality Umvuli River, Matabeleland

by R. K. Brooke

Received 23rd May, 1975

A type-locality of an animal which is given as a named river is never satisfactory since all but the shortest streams pass through a variety of habitats and altitudes. The question that arises in the student's mind is whereabouts along that river was the type collected. The Umvuli River, Matabeleland, was discussed by Brooke in, 1972, *Honeyguide* 71: 13—16, in his account of J. S. Jameson's exploration and collecting trip into what is now Rhodesia. The official spelling of the river name is Umfuli and it lies in Mashonaland, not Matabeleland. Brooke showed that Jameson made his main camp at Hartley Hills, a small group of low hills at 18°11′S, 30°15′E or c. 5 km north of the Umfuli River in the Hartley District, and that he left Thomas Ayres there to collect birds while he and F. C. Selous went on a trip north and northwest to explore the country and to hunt big game. He also showed that all the geographical co-ordinates given by Shelley (1882, *Ibis* p. 236 ff.) in his report on Jameson's bird collection were for points far to the east of where Jameson and his party travelled and camped.

Four taxa were proposed on material collected by Ayres for Jameson on the Umfuli R. I here propose to restrict the type-locality of all four to Hartley Hills, Umfuli River, Rhodesia. The taxa concerned are:—

Hyliota australis Shelley, 1882, *Ibis* p. 258;

Sharpia ayresi Shelley, 1882, *Ibis* p. 353—a junior subjective synonym of *Anaplectes rubriceps rubriceps* (Sundevall) 1850;

Francolinus shelleyi Ogilvie-Grant, 1890, *Ibis* p. 348; and

Hyphantornis jamesoni Sharpe, 1890, *Cat. Birds Brit. Mus.* 13: 447–a race of *Ploceus xanthops* (Hartlaub) 1862.

The dawn song of the Grey-backed Eremomela *Eremomela pusilla*

by L. G. Grimes

Received 21st March, 1975

In West Africa the Grey-backed Eremomela *Eremomela pusilla* occurs in the belt of dry savanna woodland extending from Senegal to western areas of Cameroun. Its distribution extends via the Dahomey gap to the Accra Plains where it is well distributed in the more wooded areas. Under "song" all handbooks on the birds of West Africa in fact describe the call (Fig. 1), which is usually associated with foraging parties, and which may be heard throughout the year and at any time of the day. Bates (1930) describes it as a "sharp toned chittering noise as if the bird is shivering with the cold". In addition, however, the male Grey-backed Eremomela has a genuine song, a monotonous chipping, which it only sings at dawn, which is quite prolonged, often lasting from 10–15 minutes or more, and which has moderate carrying power of up to 60 m. It consists of the repetition of one phrase which is made up of three notes each of short duration (Fig. 2). Each phrase lasts about

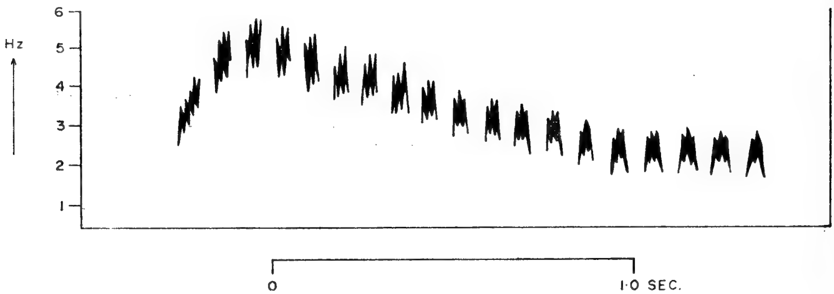

Figure 1. Diagrammatic sound spectrogram of the foraging call, usually described as the "song" of *Eremomela pusilla* in handbooks on West African birds. Recorded at Legon, Ghana, on 11 February 1974. Produced on a Kay Sonograph operating in the wide band mode.

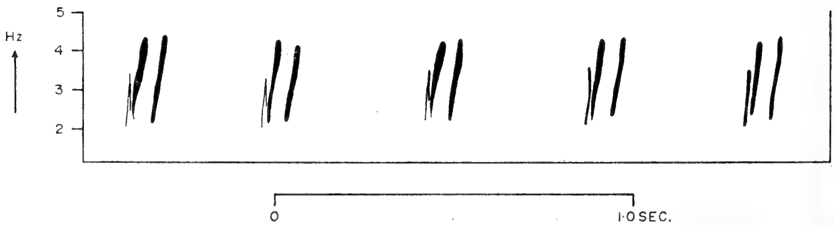

Figure 2. Diagrammatic sound spectrogram of the dawn song of *Eremomela pusilla* recorded on 3 March 1974 at Legon, Ghana. Produced on the Kay Sonograph operating in the wide band mode.

113m sec. and these are repeated at a rate of about 139 per minute. The human ear cannot resolve the first two notes in a phrase and consequently each phrase is heard as a double note. At Legon (5·63°N, 0·19°W), Ghana, males sing the dawn song from January to early September, prior to and

during their breeding season, using a perch in the shrub or on the tree used for the night roost. They may remain in the same shrub throughout the morning's singing period or else move to others nearby and continue singing. The birds start singing before light and, more often than not, can still be seen only as silhouettes when they stop; as they then leave the roost immediately, identification is impossible. As a result the Legon birds had to be netted before they were identified. Before the dawn song ceases, other eremomelas may be using the foraging calls.

Based on distribution patterns, Hall & Moreau (1970: 195) have suggested that the four eremomelas *E. scotops*, *E. canescens*, *E. pusilla*, and *E. gregalis* have evolved from an immediate common ancestor, the superspecies *E. scotops*. If this is correct and if there are vocal repertoires that have resisted modification with time, one would expect (see Lanyon 1969: 306) that these would be common to all present-day allopatric forms that comprised the superspecies. Significantly a dawn song has been described for *E. scotops* by Benson (1940: 627) and his information on the song agrees well with my description for *pusilla*. C. W. Benson only heard *scotops* singing from mid-August to October just prior to and during its breeding season. He found that males sang incessantly from a song perch in the very early morning, and he describes the song as a two noted call. Spectrographic analysis reveals that the first note is really two and cannot be resolved by the ear. The duration of each phrase (166 m sec.) is slightly longer than for *pusilla* but the repetition rate of the phrases (144/min) is approximately the same. Although the magnitude of the slope of the frequency/time profiles of the second and third notes of a phrase are about the same in both species (slightly larger in *pusilla*), it is negative in *scotops* and positive in *pusilla*. As might be anticipated a playback of the song of *scotops* produced no response in a singing *pusilla*.

The similarities between the dawn songs of *pusilla* and *scotops* suggest that it may be a vocal repertoire that has changed little with time after the four populations of the superspecies *E. scotops* had become isolated from each other. A dawn song similar to that described for *pusilla* would, therefore, be expected in *canescens* and *gregalis* during and prior to their breeding seasons. No one has yet recognised such songs, but this may simply reflect the tendency of most ornithologists only to begin their activities when there is sufficient light to identify birds, by which time the Eremomela dawn songs, if they exist, would have finished.

It is hoped that this note will encourage ornithologists resident in areas where *canescens* and *gregalis* occur to determine whether these species have dawn songs similar to *pusilla* and *scotops* and, thereby, add support to Hall & Moreau's suggestion.

ACKNOWLEDGEMENTS

I am most grateful to R. Stjernstedt for supplying me with a recent recording he has made in Zambia of the dawn song of *scotops*, and to Dr. J. Monk for commenting on the original script.

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A re-examination of the extinct Pleistocene Stork *Palaeociconia australis*

by C. J. O. Harrison

Received 7th March, 1975

SUMMARY

There has been confusion over the name of this species, it having been used for both the stork and some phorusrhacids. The valid name of the stork is *Palaeociconia australis* Lydekker 1891, *Prociconia lydekkeri* Ameghino 1891 being a synonym. In addition to the two syntypical tarsometatarsal specimens a distal end of a femur from the same deposits is also referred to this species. The three specimens most resemble the bones of *Mycteria* but the femur differs in having a large fibular groove in the present species. It is suggested that its monotypic status should be retained, but the possibility of close affinity with *Mycteria* noted.

THE VALIDITY OF THE NAME

In 1889, F. P. Moreno gave the name *Palaeociconia australis* to two ends of tarsometatarsi of a large stork from the Upper Pleistocene cave deposits of Lagoa Santa, Minas Geraes, Brazil. The specimens were in the collection of the British Museum (Natural History). The name was, however, a nomen nudum. In 1891 Lydekker figured one of the syntypes and gave a diagnosis, using the name *Palaeociconia australis* Moreno. In the same year Moreno and Mercerat used this name for some bones collected in the Miocene deposits (Upper Pliocene according to Brodkorb 1967) at Monte Hermoso, Buenos Aires Province, Argentina, and used *Palaeociconia cristata* for some material from Santa Cruz formation in Argentina. Later in the same year (December, *vide* Brodkorb 1963), Ameghino proposed the name *Prociconia lydekkeri* as a new name for *Palaeociconia australis*.

Lambrecht (1933) used *Palaeociconia* for the stork, treating *Prociconia* as a synonym. He pointed out that Moreno and Mercerat's specimens were not from storks but from phorusrhacids and transferred them to his Telmatoformes; *P. australis* in the Family Hermosionidae and genus *Hermosionis* Rovereto 1914, and *P. cristata* in a new genus *Moreno-Merceratia*. Brodkorb (1963), however, used *Prociconia lydekkeri* Ameghino as the name of the stork, regarded *Palaeociconia australis* Moreno and Mercerat 1891 as a synonym of *Prophororhacus australis*, in the family Cariamidae (Brodkorb 1967), but retained *Palaeociconia cristata* in the Phorusrhacidae, erecting the subfamily Palaeociconiinae for it.

The name used for the stork will therefore depend on the relative priority of the use of the name *Palaeociconia* by Lydekker and by Moreno and Mercerat. According to Brodkorb (1967) the date of Moreno and Mercerat's publication of the name is "May to August 5th," 1891, the text being published in May and the plates in August (Brodkorb, pers. comm.). Brodkorb (pers. comm.) quotes 25th April as the publication date of Lydekker's catalogue and inscriptions on the flyleaves of some copies in the libraries of the British Museum (Natural History) indicate that it was prior to 2nd May.

Lydekker's description therefore constitutes a validation of the name, and *Palaeociconia australis* Lydekker 1891 is the correct name for the Pleistocene stork, a conclusion with which Brodkorb (pers. comm.) also concurs after

recent reappraisal of the data. Since the name as used by Moreno and Mercerat for their *Palaeociconia australis* had been relegated to synonymy no change of name is involved in that instance but a new generic and subfamilial name is required for what was *Palaeociconia cristata*. *Patagornis* Moreno and Mercerat 1891 is available for the latter.

THE MATERIAL

The type material of the species consists of two syntypes, a distal end of a left tarsometatarsus, B.M.N.H. no. 18879, and a proximal end of a right tarsometatarsus, B.M.N.H. no. 18878. Both are from Pleistocene cave deposits of Lagoa Santa, Minas Geraes, Brazil and were purchased with the Claussen Collection in 1842 (according to Lydekker [1891] in text, but the date is given as 1845 in the introduction). The collection also contains a distal end of a left femur, B.M.N.H. no. 12878, from the same deposits and collection. This bone is from a stork, of the right size to be referred to the other material.

The distal end of the tarsometatarsus is broken across irregularly a little proximal to the facet for the 1st digit. Lydekker (1891) states that the trochleae are "somewhat imperfect". At present the flanges are worn away, particularly on the anterior and posterior aspects, and unless further damage has occurred since they were described the woodcut in Lydekker's work would appear to show some speculative reconstruction.

Brodkorb (1963, footnote) comments that this species has been referred to *Jabiru*, without adequate evidence, by Patterson and Kraglievich (1960); he suggests with reference to Lydekker's woodcut that the species should be compared with *Ciconia malthus*. The specimens have been recompared with recent ciconiid material and with illustrations and descriptions of fossil material.

The distal end of the tarsometatareus shows an arrangement of the trochleae which might be referable to *Mycteria*, *Jabiru* or *Leptoptilos* but the worn ends of the trochleae make detailed comparison impossible. It is not very similar to the distal end of the tarsometatarsus of *Ciconia*. The proximal ends of tarsometatarsi differ only slightly in the various genera, but both *Ciconia* and *Leptoptilos* show a more abrupt termination of the hypotarsus distally, and the specimen is more similar to *Jabiru* and *Mycteria*.

The distal end of the femur has not previously been available for comparison. It is large, but it resembles that of *Mycteria* in having a narrow rotular groove, and an internal condyle with a broad flat posterior surface and relatively narrow from anterior to posterior. It differs from all the specimens examined in its wide and shallow fibular groove, the external side of the external condyle projecting further at its posterior edge.

On present evidence the species therefore shows close affinity to *Mycteria* save in the fibular groove of the femur, but more material might reveal further differences. It seems preferable to retain it in its present monotypic genus but to note its apparent affinities.

The measurements of the material are—*Distal tarsometatarsus*. Length of specimen to trochlea for 4th digit 55·2, to trochlea for 3rd digit 56·9, to trochlea for 2nd digit 53·9 (these measurements are to worn surfaces); distal width 28·6; intertrochlear notch to distal end of distal foramen 7·0; length of facet for 1st digit 14·9; proximal width of shaft 14·4, thickness of shaft 8·3 mm.

Proximal tarsometatarsus. Length of specimen 100·5; distal width of shaft 12·3, thickness of shaft 13·4; distal width of anterior groove 6·5; greatest

proximal width 26·9; greatest proximal thickness, intercotylar prominence to hypotarsus 26·6; width of hypotarsus 15·1.

Femur. Length of specimen 15·9; width of shaft just proximal to distal head 17·2, thickness 15·5; greatest width across head 32·4; anterior/posterior thickness of internal condyle 20·5, of external condyle 26·8; width of rotular groove 9·9; width of popliteal area 15·3; external width to fibular condyle 23·2 mm.

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Weights and longevity of some birds from Addis Ababa, Ethiopia

by Emil K. Urban

Received 20th May, 1975

Although weights of birds from several areas of Africa have been published in recent years (see Britton 1970, Dean 1974), weights of birds from Ethiopia are not recorded in the literature except where they appear in some reports on collections of birds from Ethiopia (see Urban 1970). The longevity of African birds is poorly known and of Ethiopian birds is unknown. From January–June 1968, the author placed coloured rings on the legs of 340 birds mist-netted in the garden of his home (Mesfin Harar Road-Northern Muncipality Building district, approximately 8,700 feet or about 2,600 metres) in Addis Ababa (9°02′N, 38°47′E). Dates of subsequent sightings were recorded until January 1975. Listed below, to supplement the current ringing programme of Ash (1975) in Ethiopia, are weights (in grammes) of the birds netted and dates of sightings of marked birds and known ages of some of them. Since the author did not spend large blocks of time searching for the birds in the garden, the number of sightings and their dates do not necessarily indicate relative abundance and specific monthly occurrence.

Streptopelia lugens. 5 (sexes undetermined) 156·1–299·0 (av. 193·3). A Pink-breasted Dove marked on 21 January 1968 was seen in February, March, April and May 1968.

Cercomela sordida. 1 sex ? 20·0. This Hill-Chat was seen only briefly between 27 January 1968 when it was captured and 8 February 1968.

Cossypha semirufa. 7 (sexes undetermined) 22·5–31·0 (26·9). A Rüppell's Robin-Chat marked on 6 January 1968 with a white ring on the right leg and a yellow/black ring on the left leg was seen on 7 February and 6 April 1968; another marked on 6 January 1968 with a white ring on the right leg and an orange/black ring on the left leg was seen on 12 and 13 October 1968.

Individuals with white rings on the right leg but none on the left leg were seen within 50–100 metres of where they were captured in January 1968 on 24 November 1968, 2 December 1971, 28 May 1972, and 2 February and 21 December 1973. Because the birds marked in 1968 were adult and hence at least one year old, the Rüppell's Robin-Chat seen in December 1973 was seven years old or older.

Turdus olivaceus. 15 (sexes undetermined) 54·7–81·0 (65·9). An Olive Thrush marked on 27 January 1968 was recaptured in February, April and June 1968 and seen in October and November of the same year.

Parophasma galinieri. 1 sex ? 21·5. An Abyssinian Catbird marked on 20 January 1968 was seen four times, all within 20 metres of where it was captured, on 12 October and 29 November 1968 and 24 and 28 October 1973. Based on the 28 October 1973 observation, this catbird was at least six years old.

Melaenornis chocolatina. 3 (sexes undetermined) 21·5–22·5 (21·0). One Abyssinian Slaty Flycatcher marked on 4 February 1968 was seen in April, May and last on 14 August 1968.

Nectarinia venusta. 1 male 6·8. This variable Sunbird, captured on 17 June 1968, was not seen after its release on the same day.

Nectarinia tacazze. 10 males 13·5–18·6 (15·9), 9 females 10·0–15·1 (13·8). A male Tacazze Sunbird in adult plumage was marked on 28 February 1968 and seen within 50 metres of where it was captured on 5 March, 5 May, 6 May, 14 August, 12 October, 24 November and 29 December 1968; on 26 September 1971; on 7 October 1972; on 29 April and 16 and 25 September 1973; and on 12 October 1974. Based on the 12 October 1974 record, when the bird was photographed, it was at least eight years old. Also, a female marked in January 1968 was seen in February, March, April, August and October of the same year.

Serinus canicollis. 1 sex ? 4·0. This Yellow-crowned Canary, captured on 6 April 1968, was not seen after its release on the same day.

Serinus striolatus. 16 (sexes undetermined) 18·9–26·5 (21·0). One Streaky Seed-eater marked on 4 January 1968 was seen in February and April of the same year.

Serinus tristriatus. 125 (sexes undetermined) 12·2–19·4 (15·5). A Brown-rumped Seed-eater with a ring of undetermined colour was seen in the garden on 10 October 1971 and hence was probably at least four years old. Marked individuals were seen in all months of the year except in July and September.

Vidua macroura. 1 female ? 11·4. This Pin-tailed Whydah, captured on 16 March 1968, was not seen after its release on the same day.

Lagonosticta senegala. 4 males 7·3–12·3 (9·8), 9 females 8·1–10·5 (9·2). One Red-billed Fire-Finch, marked on 6 January 1968, was seen again only on 27 January and 7 February 1968.

Ploceus baglafecht. 112 (some not sexed) 25·5–36·3 (31·6); of these 22 were definite males 26·6–35·8 (33·1), 16 definite females 28·5–35·9 (31·0). A female Baglafecht Weaver, marked on 7 January 1968, was seen on 29 November 1970, when it probably was at least four years old. Other marked birds were seen in February, March, April, May, August, October and December 1968.

Passer swainsonii. 20 (sexes undetermined) 27·3–35·2 (31·6). Three Swainson's Sparrows marked in January and February 1968 were seen in April, May and June of the same year.

I acknowledge with thanks the Department of Biology of the Haile

Sellassie I University (now The National University) for use of facilities during my tenure there from 1964–1975, the Department of Wildlife Ecology of the University of Wisconsin (Madison) where I prepared this paper, and L. L. Urban, K. L. Urban, T. G. Jefford and I. L. Gibson for their assistance in the study.

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A new subspecies of the Long-legged Warbler, *Trichocichla rufa* Reichenow, from Vanua Levu, Fiji

by F. C. Kinsky

Received 5th May, 1975

The species *Trichocichla rufa* was described by Reichenow (1890) from three specimens bought in 1890 by the Museum of Natural History, Berlin, from "Linnaea" Naturalists, Berlin. The Holotype is held in the collection of the Museum of Natural History, Berlin, No. 28360 and the locality on its label confirms its published origin as being the Island of Viti Levu. No collecting date, sex, or collector's name are noted on the label. The two Paratypes were given in exchange to the American Museum of Natural History, New York, and to the Museum of Comparative Zoology, Cambridge, Massachusetts, respectively (G. Mauersberger, *in litt.*).

The American Museum of Natural History now holds two specimens of *Trichocichla rufa* in its collections. No. 265220 (one of the above mentioned Paratypes) is a somewhat damaged specimen and as in the Holotype no collecting date, sex, or collector's name are mentioned on the label. Only the locality, Viti Levu, Fiji, is given for this specimen. The second specimen, in excellent condition, is No. 589049, a male, collected 14 November 1894, Suva (Viti Levu), Fiji, by C. M. Woodford (J. Bull, *in litt.*).

Mayr (1945) gives the following description of *Trichocichla rufa:* "Dark rufous brown above with a conspicuous white, posteriorly buff eye-stripe. Middle of throat and breast white; sides and abdomen rufous brown. Iris and bill brown". He also points out that the species is known from Viti Levu only, has not been found during the past 50 years and is now possibly extinct. There are no further published records of this species known to me.

Colour photographs of the Holotype and of the American Museum of Natural History specimen No. 589049 were kindly supplied to me for comparative purposes by Dr. G. Mauersberger and Mr. J. Bull, respectively. The white, posteriorly buff, superciliary stripe is clearly visible on these photographs (Pl. 1a), as well as the white "middle of throat", as described by Mayr (Pl. 2a). However, the amount of white on the breast looks different in the two specimens. The breast of the Holotype seems to be uniformly light rufous brown, while in the AMNH 589049 specimen it is only the upper breast which is pale although strongly blotched with rufous brown (Pl. 2a).

At the present time a comprehensive survey of the avifauna of the Fiji archipelago is being undertaken jointly by the National Museum of New

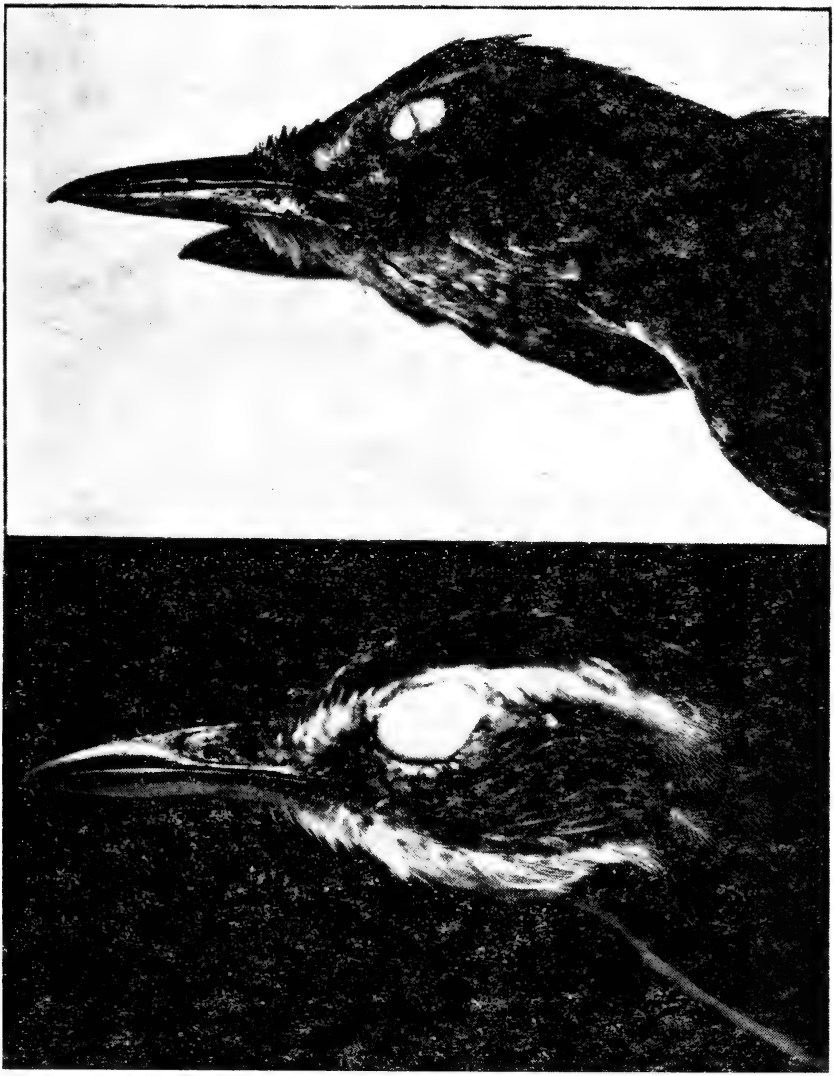

Plate 1. *Trichocichla rufa*, adult males to show contrasting superciliary stripe and throat colour:
a. *T. rufa rufa* AMNH 589049;
b. *T. rufa cluniei* subsp. nov. Holotype.
(a. is photo by AMNH and b. by Mr. T. Ulyatt, National Museum N.Z.).

Zealand, Wellington, and the Fiji Museum, Suva. Taveuni Island, western Viti Levu and Vatulele Island were visited during 1972 and 1973, and the central parts of the Island of Vanua Levu were surveyed during June and early July, 1974. On 10 June 1974, a Long-legged Warbler was collected in a mistnet in thick rain forest on the southern slopes of the Delanacau Mountain Range in west-central Vanua Levu. The bird was strikingly

different in plumage colour to published descriptions of the species *Trichocichla rufa* Reichenow. After comparison with colour photographs of two of the three specimens listed above I now consider that the new specimen is conspecific with *Trichocichla rufa*, but must be considered as a distinct subspecies on both geographical and plumage grounds.

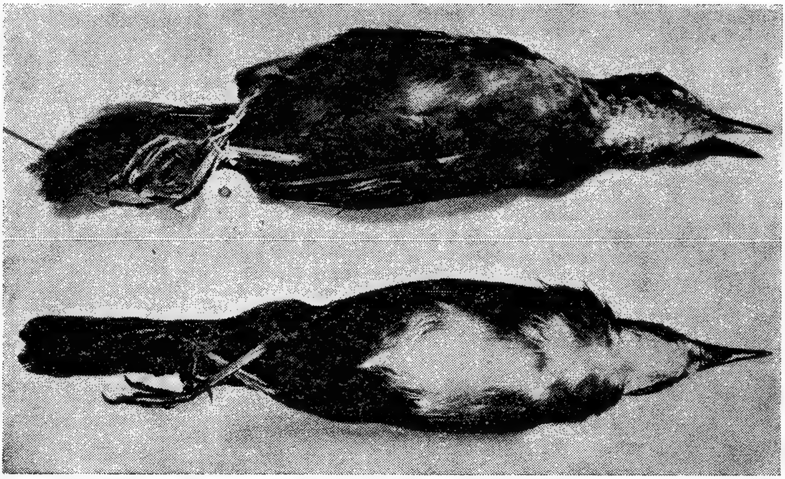

Plate 2. *Trichocichla rufa*, adult males, to show contrasting amounts of white on underparts;
a. *T. rufa rufa* AMNH 589049;
b. *T. rufa cluniei* subsp. nov. Holotype.
(a. is photo by AMNH and b. by Mr. T. Ulyatt, National Museum N.Z.).

Measurements of three specimens of *Trichocichla rufa*

Specimen:	*Date:*	*Locality:*	*Sex*	*Bill*	*Tarsus*	*Toe*	*Wing*	*Tail*
Holotype Berlin 28360	?	Viti Levu	?	17·5	30·5	26·0	81·0	82·5
Paratype AMNH 265220	?	Viti Levu Fiji	?	15·0	32·0	24·0	76·0	71·5*
AMNH 589049	14.11.1894	Suva Fiji	♂	16·0	31·0	23·5	76·5	72·5

*Tail badly worn

Trichocichla rufa cluniei subsp. nov.

Diagnosis: Adult male, upper parts including head, nape, back, rump and upper tail coverts uniformly dark rufous brown. Long, graduated tail dark rufous brown, faintly but densely barred with darker brown. Upper wing coverts, primaries and secondaries dark rufous brown with lighter rufous edges to outer veins of proximal secondaries. Broad white superciliary stripe extending from base of bill to nape, including upper eyelid (Pl. 1b). Entire chin, throat and centre of breast and abdomen white (Pl. 2b). Sides of breast and abdomen including flanks, vent and under tail coverts bright rufous brown. Culmen dark slate grey, lower mandible a contrasting light grey horn. Iris dark hazel, tarsi and toes light pinkish buff.

Differs from the nominate subspecies *T. rufa rufa* by the entirely white superciliary stripe and throat, and the white continuing in an unbroken wide stripe from the throat to the lower abdomen.

Female unknown.

Distribution: Dense rain forest of central Vanua Levu, Fiji.

Type: Adult ♂ with enlarged testes, Nabauloa Creek area, southern slopes of Delancau Mountain Range (c. 300m. above sea level), Vanua Levu, Fiji, 10 June 1974, collected by F. C. Kinsky; National Museum of New Zealand 18520.

Measurements of type: Culmen 17·4 mm, Tarsus 30·5 mm, Toe incl. claw 24·5 mm, Wing 76·5 mm, Tail 73 mm, Total length 180 mm, Weight 35g.

Remarks: Only one specimen was collected in an area of undisturbed rain forest with dense and tangled undergrowth and a thick knee-high ground cover of ferns. The mistnet (3 × 12 m) was set at ground level. A second specimen was seen in an area of similar habitat approximately one-and-a-half to two miles distant. No calls were heard. The species has not previously been reported from Vanua Levu.

Despite Mayr's comments (1933: 4) I have used the genus *Trichocichla* Reichenow for this species. However, this is done without prejudice as I realise that the status of *Trichocichla* is uncertain and its relationship to the apparently closely similar genera *Ortygocichla* (New Britain), *Cichlornis* (New Hebrides), *Megalurulus* (New Caledonia) and possibly *Eremiornis* (Australia), of the subfamily Sylviinae, are unknown.

Name: This new subspecies is named after Mr. Fergus Clunie, Assistant Director, Fiji Museum, Suva, in recognition of his valuable assistance throughout the continuing joint National Museum of New Zealand—Fiji Museum project.

ACKNOWLEDGEMENTS

I wish to express my sincere thanks to Dr. G. Mauersberger, Natural History Museum, Berlin, and Mr. J. Bull, American Museum of Natural History, New York, for all the help they have given me by supplying colour photographs, measurements and information concerning the specimens of *Trichocichla rufa* in their respective museum collections. My thanks are also due to Dr. E. Mayr, Museum of Comparative Zoology, Cambridge, for his helpful comments and encouragement.

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Geographic variation and other notes on *Basileuterus leucoblepharus* (Parulidae)

by Storrs L. Olson

Received 27th May, 1975

The White-browed Warbler, *Basileuterus leucoblepharus* (Vieillot) 1817, occurs in southeastern Brazil, Paraguay, Uruguay, and northern and central Argentina. Vieillot based his name on "El Contramaestre" of Azara and the type locality of the species has been accepted as "Paraguay". At one time Hellmayr

(1921) recognized the populations in Brazil as a distinct race under the name *superciliosus* Swainson 1837. This was said to be smaller and paler than the nominate race. Hellmayr (1935) later concluded that the distinction between these forms was not valid. At present, no races of *B. leucoblepharus* are admitted.

The discovery in the collections of the National Museum of Natural History (USNM) of a specimen of *B. leucoblepharus* from Uruguay that was markedly different from the rest of our small sample prompted me to assemble a larger series for comparison. This included 19 specimens from Brazil, 6 from Paraguay, 13 from Uruguay, and 64 from Argentina (Chaco, 2; Misiones, 28; Corrientes, 34). No specimens were available from the Argentine states of Formosa, Entre Rios, Santa Fe, and Buenos Aires, where the species also occurs (Olrog 1963).

I agree with Hellmayr (1935) that the race *superciliosus* is untenable. However, the above series indicates that within the small country of Uruguay *B. leucoblepharus* exhibits greater geographic variation than is to be found in the remainder of the species' range. The series from Uruguay is too small to determine patterns of variation within the country with any certainty, but two specimens from the Cerro de Animas are so distinct that they unquestionably merit subspecific recognition at this time.

Basileuterus leucoblepharus lemurum subsp. nov.

Description: Much darker than *leucoblepharus*, with yellow pigments greatly diminished. Underparts almost totally suffused with dark grey, leaving only a small area of white in the midline of the belly and a much reduced white area on the throat. Under wing coverts and carpal joints dark greenish, with only slight yellow margins. Feathers of crissum almost entirely dark, with slight pale yellowish or whitish margins. Bill distinctly longer and heavier than in the nominate race as indicated below:

Table
Bill length (mm) from anterior of nostril in *Basileuterus leucoblepharus*

	n	*range*	*mean*	*s.d.*
B. l. leucoblepharus	18	6·9–8·0	7·57	·32
B. leucoblepharus subsp. (Uruguay)	9	7·1–8·0	7·54	·24
B. l. lemurum	2	8·2; 8·3	—	—

Distribution: Known so far only from the Cerro de Animas, Maldonado, Uruguay.

Type: USNM 473565, sex unknown, Cerro de Animas, Depto. Maldonado, Uruguay; collected 14 June 1959 by J. Cuello.

Measurements of type: culmen from anterior of nostril 8·35 mm, wing chord 68, tail 62·7, tarsus 25·4, middle toe with claw 18·2.

Paratype: Topotypical male, AMNH 786105, collected 3 November 1962 by J. Cuello.

Material examined: as detailed in paragraph 2 of this paper.

Etymology: Latin, *lemures* (gen. pl. *lemurum*), ghosts of the departed, shades . . . in allusion to the type locality (Sp. *animas*, souls).

Remarks: This form is distinguishable at a glance from typical *leucoblepharus*, which is much whiter below and has clear yellow underwing coverts and crissum. The few other specimens of this species from Uruguay are recognizably distinct from the nominate form but are not so divergent as the two assigned here to *lemurum*. The best series of these consists of six from

Cerro Largo, Rio Negro (AMNH 802181–6) collected in March 1969. Three from Quebrada de los Cuervos (FMNH 64709–11) are somewhat foxed, while two from Rocha (USNM 284045, 285184) are in rather poorer condition. None of these 11 specimens is as dark or as long-billed as *lemurum*, but all are darker and less yellowish than typical *leucoblepharus*. The colour of the crissum is extremely variable, as seen particularly in the series from Rio Negro, and ranges from very pale, almost white, to yellowish with dark centres to the feathers. None has the crissum as dark as in *lemurum* or clear yellow as in typical birds. Certain specimens from Corrientes, Argentina, show a tendency towards such variation in the colour of the crissum but are otherwise much lighter than Uruguayan birds. Five specimens from Rio Grande do Sul, Brazil (AMNH), are somewhat darker overall than nominate *leucoblepharus*, probably reflecting some genetic influence from the dark birds to the south.

B. l. lemurum is as yet known only from a range of low hills in the southeasternmost part of Uruguay. A larger series of specimens is needed before the nature of variation in *B. leucoblepharus* in the rest of the country can be assessed. It may prove possible to recognize additional forms. It seems rather remarkable that such pronounced differentiation in this species should be observed in Uruguay, which is a small, ecologically rather uniform area, not known to be particularly conducive to the processes of subspeciation.

Relationships of the species: Mostly on the basis of voice and the bird's ground-dwelling behaviour, *Basileuterus leucoblepharus* has been considered related to the *Basileuterus rivularis* group (Meyer de Schauensee 1966; Lowery & Monroe 1968). The latter authors have maintained this group in a separate genus, *Phaeothlypis* Todd 1929, but retained *leucoblepharus* in the genus *Basileuterus*. Meyer de Schauensee (1966), probably following Hellmayr (1921), suggested that *B. leucoblepharus* may be only subspecifically distinct from the rare species *B. leucophrys* of Brazil. Differences in colouration and pattern, the long rounded tail, much greater size, and broad flattened bill of *B. leucophrys* readily distinguish this form at the specific level from *B. leucoblepharus* (which has a slender, terete bill) and clearly ally it with the *B. rivularis* group. It should be noted that Lowery & Monroe (1960: 75) have erred in saying that *B. leucophrys* "has the tail decidedly longer than the wing", since its length is actually equal to or slightly less than that of the wing. Their suggestion that *B. leucophrys* "may not be a parulid" can therefore be discounted.

It is clear, at least on morphological grounds, that *B. leucoblepharus* is not particularly closely related to the *B. rivularis* group, including *B. leucophrys*. Rather, its closest relative, as noted by Todd (1929) and Hellmayr (1935), appears to be the widely disjunct species *B. griseiceps* of northeastern Venezuela, which is identical in bill shape, proportions and colour pattern, and differs only in having the underparts wholly yellow instead of white. Elsewhere in the genus, this difference is accounted to be of no more than subspecific value, as for example in *B. coronatus* in which there are both white-bellied and yellow-bellied races.

ACKNOWLEDGEMENTS

For their consideration in lending specimens I am grateful to Dean Amadon and John Farrand, Jr., American Museum of Natural History (AMNH); Charles G. Sibley, Peabody Museum of Natural History Yale University; David W. Snow, British Museum (Natural History); Melvin A.

Traylor, Field Museum of Natural History (FMNH); Kenneth C. Parkes, Carnegie Museum of Natural History; and Frank B. Gill, Academy of Natural Sciences of Philadelphia. To Mr. Farrand and Dr. Parkes I am further indebted for their critical comments on the manuscript.

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The identity of *Ninox scutulata* Raffles

by E. C. Dickinson

Received 20th May, 1975

Foremost of several problems surrounding the nomenclature of the Brown Hawk Owl *Ninox scutulata* has been the identity of the type specimen of the typical race. Recently Mees (1970) has strongly established the case for treating Sumatran residents, rather than visitors, as nominate *scutulata.*

If no more tangible evidence of the identity of Raffles's type existed than has already been presented, the application of *scutulata* to the resident race could still be upset should an undoubted type specimen come to light that belonged to the migrant form. More tangible evidence does however exist.

As listed in Horsfield & Moore (1854), the museum of the Hon. East India Co. received a specimen from Sir Stamford Raffles in 1820 *and a drawing* in 1821—the year before the form was described. There appears to be no contesting that *scutulata* was based upon the specimen depicted. The drawing eventually reached the India Office Library in London and thanks to Mrs. Archer of that Library and Mrs. Woods, the Librarian of the Bird Room, British Museum (Nat. Hist.), Tring, it has been possible to trace it. The drawing is bound into Volume IV of "Natural History Drawings from the collection of Sir Stamford Raffles". This volume contains drawings Nos. 537 through 670 and the drawing in question is No. 545 in this series. It also bears No. 64—presumably an older number and the title *Athene scutulata* Raffles (Raffles described the species as *Strix scutulata*). A photographic reproduction of this plate appears opposite.

Incidentally, Vaurie (1960) argued that "the description given by Raffles for his *scutulata* is not diagnostic . . .". Be this as it may the drawing is clearly of the resident form. Apart from differences in measurements between the two races Robinson (1917), dealing with Malayan birds, isolated two distinctions in appearance which may be paraphrased as follows:—

	Malayan migrants	*resident birds*
—head	"capped-looking"	Not capped-looking
—underparts	conspicuous white stripes below	Stripes below less conspicuous

On the facts it can be concluded that *scutulata* is indeed correctly applied to Sumatran/Malayan residents.

ACKNOWLEDGEMENTS

In the final form this note owes much of its clarity to very useful comments from Lord Medway, Dr. G. F. Mees, Dr. K. C. Parkes and Dr. D. R. Wells.

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Introduced tanagers on Tahiti, Society Islands

by D. T. Holyoak and J.-Cl. Thibault

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Bruner (1972: 125) records that on Tahiti "*Richmondena cardinalis*, the well known Richmond Cardinal of the Southeastern United States . . . in recent years has been confined to the districts of Punaauia, Paea and the more remote parts of the district of Tautira". There have been no other reports of cardinals on Tahiti, despite much recent fieldwork in the districts mentioned (Holyoak 1974, Thibault 1974).

However, black-and-red coloured tanagers have been observed repeatedly by J.-Cl. T. in the Punaauia, Paea and Taravao districts of the island. A recent photograph by Claud Rives (soon to be published in a popular book by Thibault & Rives) shows that the species concerned is the Crimson-backed Tanager *Ramphocelus dimidiatus*. It is true that Thibault & Thibault (1973), Holyoak (1974) and Thibault (1974) were previously under the impression, in the light of various reports they had received, that the species involved was the Scarlet Tanager *Piranga olivacea*, a mistake that probably arose through some confusion of *R. dimidiatus* with *Ramphocelus bresilius*, the latter species usually being known as "Scarlet Tanager" in English avicultural literature.

The distribution of the "Richmond Cardinal" reported by Bruner partly coincides with the records of *R. dimidiatus*, nor does he make mention of any tanager. It thus seems possible that, despite the very considerable differences between the two species, the birds he recorded as cardinals were in fact tanagers. In our view, *Piranga olivacea* should therefore be removed from the list of birds of the south-east Pacific, and *Cardinalis* (=*Richmondena*) *cardinalis* should also be removed unless clear evidence is produced of its occurrence on Tahiti.

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Further notes on birds of Wallacea

by C. M. N. White

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The four notes which follow result from a continuing study of the birds of Wallacea which, it is hoped, will lead to a modern Check List of the birds of that area.

Dupetor flavicollis

The Black Bittern has a range extending from India and China to the Solomon Islands and Australia. There is however a marked area of discontinuity between the Asiatic and Australasian populations, in which the

species is absent or apparently a non-breeding migrant. This break includes much of Wallacea. Nominate *flavicollis* is believed to be a non-breeding migrant in Malaya (King *et al.* 1975 : 50) and only known as a winter migrant in Borneo. It has been recorded breeding very rarely in west Java in May. Meyer & Wiglesworth (1898: 861) noted that specimens from Talaut, Siao and north Celebes were collected between October and March and might be winter migrants, but reported also an immature from south-west Celebes in July indicative of possible breeding there. Since then a few more examples have been collected in north-central and south-east Celebes and at Kalidupa, Tukang Besi islands, all between December and March. Apart from the July record it thus seems likely that *flavicollis* is only a winter migrant to Celebes and adjacent islands.

Australasian *gouldi* has a very extensive range from Australia to New Guinea and the Bismarck Archipelago and west into Wallacea (Batjan, Halmahera, Morotai, Kei Islands, Seran, Ambon, Buru). Unlike the Asiatic form, *gouldi* is extremely variable with black and rufous phases common in parts of its range, including Wallacea. Curiously melanistic birds have also been reported from Sangihe between Talaut and north Celebes. As explained above the nominate form would be expected at this locality and only as a winter visitor. An outlying population of *gouldi* may exist at Sangihe, but it is perhaps more likely that the black phase birds attributed to that locality are Moluccan specimens with incorrect localities. Meyer & Wiglesworth had two attributed to Sangihe: one lacked data but was said to be from that island whilst the other came from the dealer Bruijn at Ternate, and was said by his assistant Laglaize to have come from Sangihe. Until authentic melanistic birds from that locality are available, such specimens should perhaps be regarded as of doubtful provenance.

In southern Wallacea from Lombok through the Lesser Sundas and the South-West Islands the species is not recorded apart from Timor. Lesson in 1831 described a specimen as *Ardea australis* "du Voyage de Peron". This example was collected during the Baudin expedition which visited Timor in 1801 and 1803. The only recent Timor record is a female collected by Stein in 1932. It was discussed by Mayr (1945: 4–5) who tentatively recognised *australis* because this Timor bird had a bill 3 mm. shorter than any other examined and was a rather pale rufous dorsally, though he admitted that the differences were small. It seems likely that he adopted this course because otherwise *australis* would have to replace *gouldi*, antedating it by twenty five years. It seems very likely that the Timor birds were only casual migrants from Australia and do not represent a distinct breeding population. Little weight can be given to the minor differences in Stein's specimen in view of the great variation in *gouldi*.

The discontinuity in Wallacea between Asiatic and Australasian populations of the Black Bittern is worth stressing because this pattern is found with a number of species common to southern Asia and Australia.

Gorsachius melanolophus

White (1973: 175–176) in reviewing the status of night herons in Wallacea stated that the Malayan Night Heron, *G. melanolophus*, had not been recorded there. This statement overlooked the fact that Meyer & Wiglesworth (1898: 848–850) recorded it from Esang, Talaut Islands, under the name *G. kutteri*, now regarded as a form of *melanolophus*. The record has been overlooked since it was published and the locality was not mentioned by Peters (1931:

117). An adult, a semi-adult and an immature bird were obtained in late October 1894. It is not certain, however, whether they represent an isolated breeding population at this locality. Smythies (1960: 131) considered it an occasional visitor in Sarawak and North Borneo, as did Gore (1968: 171) in the latter locality. A straggler was recorded from Palau over a century ago (Baker 1951: 90). They may well have been post-breeding vagrants from the Philippines since eggs were found by Whitehead in Palawan on 27 June. The identification seems satisfactory as the axillaries were described as white with dark bars: this according to Rand & Rabor (1960: 414) distinguishes *G. melanolophus* from *G. goisagi* in all plumages (the latter having them barred black and rufous).

Pandion haliaetus

Ospreys occurring in Wallacea are currently indentified as *P. h. melvillensis* extending to northern Australia and Solomon Islands, and doubtfully distinct from *P. h. cristatus* by smaller size (Brown & Amadon 1968: 196). Macdonald (1973: 114) does not recognise *melvillensis*, and Goodwin (in Hall 1974: 56) points out that the measurements of the two forms overlap considerably, and that Peters was probably wise in not recognising *melvillensis*. I have assembled wing measurements of thirty-one specimens from Wallacea. The wings of twelve males are 413–439 mm, rather longer on average than the range for *melvillensis*, which is given by Brown & Amadon as 384–428 but about the same in length as those of *cristatus* males, given as 426–431. I do not regard *melvillensis* as recognisable.

Ospreys are widespread in Wallacea in Celebes and adjacent islands and in the Moluccas but records from the Lesser Sundas are very few (only Lombok and Sumba) do that it may be very sparse there.

Meyer & Wiglesworth (1898: 89) gave details of twenty birds from Celebes, Sangihe, Talaut and Banggai and commented on the presence of some very large birds with wings of 470 and 495 mm which they thought were migrants of the nominate Palaearctic *haliaetus*. This is very likely as the nominate form is known to winter in the Philippines and Borneo. Dr. Siegfried Eck has very kindly given me information on the material still in the Staatliches Museum für Tierkunde, Dresden, which was used by Meyer & Wiglesworth. Only eight specimens remain, all with the pale head of *cristatus* and the largest, from north Celebes, with a wing of 465 mm. The birds from Sangihe listed by Meyer & Wiglesworth with wings 470 and 495 mm, may well have been Palaearctic migrants, but would need to be examined again if in fact they still exist. It should be noted that the crown in *cristatus* is not always pure white and some dark brown spots may be present.

Gallinago gallinago

White (1975: 37-39) reviewed the occurrence in Wallacea of migrant Palaearctic waders, either wintering or on passage to Australia, and drew attention to a few others which might occur. One of these can now be added to the list. In the British Museum (Natural History) is a female *Gallinago gallinago* from Batjan obtained by A. R. Wallace and with registered number 73.5.12.2292. It had been duly recorded by Sharpe as specimen h7 when he wrote volume 24 of the Catalogue of Birds in the British Museum but was overlooked by Hartert (1903) when he listed the birds of Batjan, and subsequently by van Bemmel (1948). I am grateful to Mr. I. C. J. Galbraith for confirming that the specimen is still in existence and has been correctly

identified. It is presumably only a vagrant in Wallacea, for Smythies (1960: 207) reported that in Borneo its occurrence was irregular. Coomans de Ruiter (1948: 191) gave details of snipe shot in two seasons in southern Celebes, comprising fifty-one *G. megala* and six *G. stenura*.

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Notes on the birds of the Sierra Nevada de Santa Marta, Colombia

by W. J. E. Norton

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INTRODUCTION

These notes comprise field observations made between 12 January and 5 February 1974, on the RAF Mountaineering Association's expedition of which I was a civilian member. No specimens were taken and opportunities for field observations were limited, most of the time being spent at altitudes of 14,600′ and above where birds were extremely scarce, while the few days spent in the lower valleys were generally associated with long and arduous marches. Nevertheless, because the avifauna of this isolated range has special features of interest but has received little attention in the last 50 years, and because of the wide span of altitude covered on foot (2,700′–19,000′), some of our observations may be of interest as supplementing earlier work. Of particular concern to us was the status of the Andean Condor: the presence of a colony of these birds was one of the principal reasons why the Colombian authorities have declared the high-altitude zone a National Park.

In preparing these notes I have referred mainly to the paper by Todd & Carriker (1922), which is still regarded as the most authoritative work on the bird life of the region. They give a fascinating account of the geological evolution of the range, which is important for an understanding of its fauna. In brief, the Sierra Nevada de Santa Marta is a glaciated granite group comprising the highest peaks in Colombia and also the highest coastal range in

the world, rising directly from the shores of the Caribbean. It has something of the character of an island, 50–100 miles breadth, but in origin is the westerly remnant of a very old range whose eastern extremity may still be seen in the Venezuelan coastal range, 400 miles to the east: the intervening heights have largely disappeared under the sea, except where they still emerge as the low-lying Dutch Antilles. The Andes, whose easterly arm in Colombia (the Sierra de Perija) is a mere 20 miles away at one point, are of much more recent formation, at one time linking the Venezuelan Coast Range to the main Andean system. In the Tertiary, when the evolution of birds was at its zenith, the montane species originating from some centre probably far to the south, spread via this link to the Sierra Nevada de Santa Marta, then a peninsula cut off except to the east. Later the link was severed by erosion, bringing the evolutionary forces of isolation into play. In the final phase, land links to west and south were established, leading to an infusion of lowland species, a process that is still continuing to-day.

To these origins, according to Todd, all the special features of the Sierra avifauna are attributable:—

1. In a country with an unparallelled diversity of bird species, it has the relatively impoverished character of an island and the number of species falls off more sharply with altitude;

2. it has developed a number of highly peculiar forms, with no less than 14 indigenous species and a larger number of differentiated subspecies;

3. the birds have a notable affinity to those of the Venezuelan Andes and Coast Range far to the east and south-east and a marked dissimilarity to the much closer eastern Colombian Andes species.

These features may be seen in varying degree in the four altitudinal life zones. As might be expected the Tropical Zone (up to 5,500′) has the richest and least differentiated avifauna. At the other extreme, the Páramo or Alpine Zone (11,500′ to the snowline at around 16,000′) is so small in extent that completely isolated forms have had little chance to develop. Thus all the endemic forms belong to the two intervening forest zones, the Subtropical (or cloud forest) (5,500′–8,500′) and the Temperate Zone above it. Regrettably, from an ornithological standpoint, those were the altitude zones in which the expedition spent the least time.

The approach march, starting on 12 January, began at Atanquez (2,700′, some 17 miles north of the provincial capital, Valledupar), crossed two ridges to the village of Donachui (4,800′ in the Upper Tropical Zone) and finally 20 miles up the Donachui valley (to which most of the records refer) to our base camp at 14,600′ near Lake Naboba, from which and from various higher camps we climbed the main peaks. We returned by the same route reaching Atanquez on 6 February.

In the lower valleys and up to an elevation of 6,500′ in the Donachui valley, there is much cultivation and deforestation has left many slopes bare, though some sizeable remnants of forest survive. Further up, the forest is more continuous, cultivation minimal and between 9,000′ and 10,000′ there is a wealth of flowering shrubs, attractive to hummingbirds and flower-piercers. From 10,000′, the forest thins out, although stunted trees and shrubs, including that extraordinary plant *Espeletia mereiifolia*, an indigenous species but belonging to a genus of the Compositae which is very typical of the Andean *paramo*, straggle to nearly 13,000′. Above that the vegetation is truly alpine but scree predominates and there are a remarkable number of

lakes of glacial origin; the snow line in the dry months of January and February varies between 15,000′ and 17,000′, but can be somewhat lower at other seasons. It was clear that in these southern valleys the life zones (which may vary locally by as much as 2,000′) run high and I have reflected this in the altitudes quoted, which are the maximum recognized. The Donachui valley, for example, has an almost exclusively Tropical fauna, though in altitude a considerable section would normally correspond to the Lower sub-Tropical Zone.

The systematic list which follows includes only some 26 species, on which special points of interest—whether of geographical or altitudinal distribution, behaviour or status—were noted. They include all the distinct Santa Marta species or subspecies on the grounds that, even if there are no new data, evidence of their survival is bound to be of some interest in a country which has already lost several hundred bird forms through deforestation and other human activities (Lehmann 1970). Another 11 species were recorded on the expedition and, inevitably, there were another 6–10 species which were not satisfactorily identified. In the following specific notes the classification and nomenclature used by Meyer de Schauensee (1964) have been followed.

SYSTEMATIC LIST

Vultur gryphus, Andean Condor. The Sierra Nevada de Santa Marta supports one of the few surviving populations in Colombia of this increasingly rare species, long persecuted both by trophy hunters and farmers. Curiously, it is not mentioned by Todd, but its status is now certainly of lively concern to the conservation authorities in Colombia.

Our observations suggested that there are at least two distinct small colonies in the Sierra, in the main group of peaks at 14,000′–17,000′ and, unusually, in the lower valleys some 20–25 miles to the south-east at about 6,000′–7,000′.

In the high peaks we saw condors almost daily, their hunting range extending over the whole eight miles from Pico Simmons in the west to Pico Codazzi in the east, and from the upper reaches of the northern valleys to the south of El Guardian peak. On 11 out of 15 days spent at such altitudes, I saw from one to three condors, and the many sightings by others included one of 4 and one of 5 birds. A juvenile was seen on four occasions, on half of which it was in the company of two adults, suggesting a first-year bird (Porter 1969). Thus the total population cannot be less than 5 and is probably somewhat more. Times and localities of appearances were in general unpredictable, though in the absence of thermals condors were seldom if ever seen in the early or late hours of the day; many sightings were from our base camp, not surprisingly, in view of its central position. The birds seemed to favour certain minor summits, around 16,500′–17,000′, presumably as good lookout posts. We obtained no clear evidence of nesting activity, but on the evening of 24 January, a repeated raven-like croak was heard from a craggy slope above the base camp, a quarter from which condors sometimes appeared, and as no other large birds were to be seen at that altitude, it seems possible this was the "tok-tok-tok" note, made in courtship display as recorded in captive birds (Brown & Amadon 1968), although the evidence from captive birds also suggests that this is a time of year when young should be being fed at the nest. We never actually saw condors feeding, but the main food supply must clearly be casualties in the small parties of feral cattle which roam the *paramo* up to 16,000′: one clean-picked carcase was

noted, as well as several skulls from such carcases placed on prominent rocks by local Indians. There are also a few sheep about and one deer was spotted on the screes at 14,000′, probably a White-tailed deer *Odocoileus virginianus*.

The evidence for the other, lower, population was the sighting of 1 to 3 condors gliding at about 6,000′ over the lower Donachui or Guatapuri valleys, a few miles above their confluence, on 6 out of 8 days spent there. None were ever noticed in the intervening 20 miles and 7,000′ of altitude between this locality and the haunts of the higher population. There were at least 4 birds in this group, including another presumed first-year immature accompanying two adults. A pair frequenting a small cliff overlooking Donachui village could have been nesting. The lower area is well-settled and it is gratifying that the condors seem able to survive in such proximity to man. It is true that Olivares (1970) casts doubts on condors that descend from high haunts to approach sheep corrals and occasionally find an abandoned lamb, being able to subsist in lower areas once these are "heavily populated and farmed"; but assuming we are right that a low level population survives and the birds we saw were not foragers from the peaks, there is a possibility that there could be other similar populations in the Sierra, though competition with Turkey Vultures may be a factor of uncertain significance.

Cathartes aura, Turkey Vulture. Recorded by Todd as "more abundant in the higher than the lower altitudes", but my impression was exactly the opposite, the vultures being abundant in the plains but only one or two pairs being noted in the mountains around 6,000′. As already noted competition with condors may be a factor.

Coeligena phalerata, White-tailed Starfrontlet. One of the Santa Marta endemics: one probably a not fully mature ♂, was noted at 10,000′ at the upper limit of closed forest and of the species' normal altitude range as recorded by Todd.

Piculus rubiginosus alleni, Golden-olive Woodpecker. An indigenous subspecies only once seen at 5,000′ near Donachui village.

Cinclodes fuscus, Bar-winged Cinclodes. Resembling a small eye-browed Song Thrush, only less common than the Plumbeous Finch in the *paramo* at 12,000′–16,500′ and often seen singly though Todd says "always occurs in pairs". Like the finch it was notably tame and its loud trilling was a regular dawn sound near the base camp. My observations did not bear out Todd's statement that it "evidently feeds entirely on aquatic insects", though it was generally seen near water and behaving rather like a Dipper as its name implies. I watched one at over 15,000′ foraging on patches of bare often muddy earth among glacial debris, flying from one such patch, which was quite dry, with what looked like a sizeable grub in its beak. A newly fledged juvenile was noted at 13,000′ on 3 February, the only evidence of nesting.

Asthenes wyatti sanctaemartae, Streak-backed Spinetail or Canastero. Todd remarked on this rather than *Cinclodes* as being the second commonest bird in the *paramo*, after *Phrygilus*, from 10,000′–15,000′ but straggling down as low as 8,000′. I found it much less common, sighting single birds or pairs on half a dozen occasions only and in the much narrower range of 14,000′–15,500′. It was also much shier than the other two species, never like them scavenging in the camps although frequenting their neighbourhood and uttering a rather similar trill to that of *Cinclodes*.

Ampelion rubrocristatus, Red-crested Cotinga. Several at 10,000′–10,500′, bearing out Todd's observation that they are usually found in scattered trees not forest. The crest-raising does not seem to have been recorded: a pre-

sumed ♂ alighting on a tree near another, presumably a ♀, (the sexes are alike), briefly erected its crest, with startling effect as the small tuft on the nape of this subdued blue-grey bird was suddenly transformed into a splendid hoopoe-like, serrated crimson crest. No other signs of courtship were, however, noted.

Tityra semifasciata, Masked Tityra. A party in a tree at Donachui (4,800′) uttered very strange calls like the deep croaking of a bull-frog.

Cnemarchus (=*Myiotheretes*) *erythropygius erinomus*, Red-rumped Rush-tyrant. An indigenous subspecies, noted twice in well-watered meadowland among the highest scattered trees at 12,200′.

Ochthoeca rufipectoralis poliogastra, Rufous-breasted Chat-tyrant. Another local subspecies, seen on about four occasions, usually in scattered scrub as noted by Todd, at 10,000′–11,000′. Call note "tchick-tchick" and behaviour like English Robin.

Tyrannus melancholicus, Tropical Kingbird. This common Tropical Zone species was seen up to 6,500′, though Todd gives 5,000′ as its upper limit.

Pyrrhomyias cinnamomea assimilis, Cinnamon Flycatcher. A very distinct local subspecies, which is almost entirely bright rufous, apart from a few dusky wing feathers, and lacks the green crown and back and black tail of the typical Andean form. A party of 3 or 4 were moving, warbler-like, through cloud-forest at 6,800′ (near the species' upper limit according to Todd) in company with several Yellow-crowned Redstarts.

Mecocerculus leucophrys montensis, White-throated Tyrannulet. Local race; a small party observed in isolated scrub at 11,200.

Notiochelidon cyanoleuca, Blue-and-white Swallow. Parties were hawking over open sections of the Donachui valley from 4,800′–11,500′, the latter rather higher than any observed by Todd. He only noted it perching and nesting in rock crevices, but I saw a pair which appeared to be nesting under the eaves of a mud-brick building in Donachui village (4,800′).

Cinclus leucocephalus rivularis, White-capped Dipper. A local race distinctive enough to be accorded specific status by Todd. It has much less white, especially on the underparts, than the Andean form and Todd regarded it as a bird of the Temperate Zone, though he saw it at both higher and lower altitudes. I noted the species in 4 or 5 places on the Donachui river from 10,000′–13,000′, i.e. well into the *paramo* zone. The call note sounded rather lower-pitched than that of the European Dipper.

Turdus fuscater cacolelus, Great Thrush. A local race, occurring from 5,000′–12,000′, according to Todd, in open grassy places with scattered shrubs and stunted trees. I never saw it below 10,000′, but it was common from there up to 14,000′ and at the higher levels frequented *paramo* virtually devoid of all scrub cover.

Psaracolius decumanus, Crested Oropendula. Quite common in cultivation up to 5,500′; a party of 20 frequenting banana clumps and forest fringes round Donachui were notably active in the hour before dusk, sometimes consorting with a few Giant Cowbirds *Scaphidura oryzivora* (which is known to parasitise their nesting colonies) or Black-chested Jays *Cyanocorax affinis*.

Icterus chrysater, Yellow-backed Oriole. This species is, surprisingly, not mentioned by Todd and, perhaps because of that omission, also said to be absent from the Santa Marta region by Meyer de Schauensee (1964 and again 1971). I found it quite a common and conspicuous inhabitant of the Tropical Zone from Atanquez upwards, extending into the Sub-Tropical up to 6,500′. Favouring mixed cultivation with adequate tree and shrub cover, a party of

10, for example, was regularly to be seen round Donachui village, their loud, not unmelodious, but monotonous song (two phrases, not always sung together: one rising up the scale, the other a double-note repeated several times) being very characteristic of the region. A possible explanation is that the oriole is one of the lowland forms from the south and west, which has invaded the region since Todd's time 50 years ago, when he remarked that such an invasion was still in progress.

Myioborus miniatus sanctaemartae, Slate-throated Redstart. An indigenous subspecies, distinguished by its uniform golden yellow underparts (the Andean is ochraceous on the upper breast, and the Central American is red). It was observed only once at 5,000′ in open forest, though described by Todd as common.

Myioborus flavivertex, Yellow-crowned Redstart. An endemic species, seen once with Cinnamon Flycatchers *Pyrrhomyias* as mentioned under that species, and once, a single bird, at 9,000′, in well-forested parts of the valley. Todd did not find it common either.

Basileuterus conspicillatus (=*basilicus*), Santa Marta or White-lored Warbler. Again an endemic species of wood warbler, of which one only was noted in cultivation at Donachui village, although this species unlike the last was said by Todd to be "abundant" in the forest at a similar altitude (c. 5,000′).

Diglossa carbonaria nocticolor, Coal-black Flower-piercer. Also recorded as abundant by Todd, but I only noted single birds on two occasions, flitting from bush to bush near the upper limit of forest at 10,000′.

Pheucticus ludovicianus, Rose-breasted Grosbeak. This was the only wintering North American migrant seen, 3 or 4 frequenting cultivation near Donachui. One ♂ seen was in full winter plumage on 14 January and another ♂ seen next day was in full summer plumage.

Volatinia jacarina, Blue-black Grassquit. Not seen by Todd over 2,000′, though he refers to an earlier specimen from 5,000′, much the same level as that at which I found several near Donachui village.

Phrygilus unicolor nivarius, Plumbeous Finch. This local subspecies was, as previously noted, the commonest bird of the higher *paramo*. It was to be seen, singly, in pairs or in very small parties, wherever there was significant vegetation from 13,000′–15,000′, and still commonly in the more vegetated zone down to 11,500′, often in apparently amicable association with the insectivorous and therefore non-competing *Cinclodes*. In marked contrast to Todd who describes it as very shy, I found it exceptionally tame, a frequent scavenger at our high camps and hopping very close to humans. I heard what I took to be a song, a Greenfinch-like "wheeze" once uttered from the top of a prominent boulder; a thin piping was the normal call note. Feeding on a nine-inch high grass and on the stems of a small white-petalled flower, growing in five-inch high clusters, was noted.

Zonotrichia capensis, Rufous-collared Sparrow. Properly a bird of the Temperate Zone, but it has a wide range and I noted a pair on the highest isolated bush in the Donachui valley, at 13,800′ in the Páramo Zone. However, though agreeing with Todd that it avoids forest and is essentially a scattered bushland species, I did not find it in the abundance to which he refers. The song was heard on 17 January (at 13,000′) and on 3 February.

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Notes on the Pauraque *Nyctidromus albicollis* in French Guiana

by J. Ingels

Received 19th June, 1975

The Pauraque is common in tropical America from southern United States to Paraguay and northern Argentina, and from Ecuador and Peru to Brazil, the Guianas and Trinidad. It exhibits a great ecological tolerance, its habitat ranging from woodland edges and clearings in heavy rainforest to cultivated country or semi-arid regions (Skutch 1972). Extensive accounts of its habits have been given by Bent (1940) and Skutch (1972), and further information by Haverschmidt (1968), Wetmore (1968) and ffrench (1973).

The subspecies *Nyctidromus albicollis albicollis* is one of the commonest of the Caprimulgidae in Guyana and Surinam (Davis 1953; Haverschmidt 1955a and 1955b). In French Guiana, however, although collected in the past, it was not included in a recent collection of 120 species described by Berlioz (1962), and its nesting has never been recorded. The occurrence of the species and discovery of a 'nest' between 24 August and 4 September 1974 in the coastal savannas near Kourou are therefore of interest.

Driving along forest or thicket-bordered roads in the neighbourhood of Kourou, e.g. along Route N1, especially between Tonate and the airport Rochambeau, and along the Route du Dégrad Saramaka, one regularly saw the shining orange-red of Pauraque's eyes reflected in the headlights. The birds would often wait until the car was almost upon them before flying off, thus making identification fairly easy, especially of males with their white wing and tail markings. In three hours or about 150–180 km of night driving, at least 11 Pauraques were thus noted.

The Pauraque normally breeds in the dry season, no doubt because a ground-nesting species is likely to lose eggs or young in heavy rains, although occasionally broods have been found in the wet season. Skutch (1972), analysing the nesting data north of approximately 5°N latitude, found that Pauraques breed from February to June. In southern latitudes, nesting takes place from July to January (Mitchell 1957). In Surinam nests have been found from March to October, illustrating the transitional character of the breeding season (Haverschmidt 1968).

The rainfall for French Guiana has a "southern" character, with the succession of dry and rainy seasons resembling closely that around Belém in the Amazon delta (Pinto 1953); the main dry season is from July to November, and a shorter less pronounced one in February and March. It was not surprising therefore, to find a "nest" with one egg on 24 August 1974. The discovery was made when an incubating female was flushed at 0925 in the

morning, from a site on the edge of a clearing in primary forest on the left bank of the Kourou river, about 500 m downstream from the Dégrad Saramaka. In this clearing, which was bordered on one side by the Kourou river, about 20 x 30 m² of undergrowth and small trees had been cut down, leaving only larger shade trees. Each weekend, a "carbet" (primitive shelter) built in the clearing was occupied by a family.

The single egg of the pauraque lay on a layer of dead leaves and litter, approximately 1 m from the edge of the clearing, with no indication of any nest building. Around the site, the forest floor was partly covered with a ground-creeping herb. The site was therefore quite typical for this caprimulgid. Two days later (26 August), when I returned to the clearing, I found the egg unattended. I learnt that over the weekend, the clearing had been continuously occupied and it seems possible that the disturbance had caused the Pauraques to desert. After photographing the site, I collected the egg. One end is slightly more pointed than the other; ground colour pinkish buff, with light blotches and spots of brown, buff and lilac concentrated around the blunt end; measurements 29·8 x 20·8 mm, well within those of eggs of this subspecies collected in Surinam (31·1–29·1 × 21·8–20·5 mm; Haverschmidt 1968). The egg was slightly incubated, indicating that it had been laid within the week from 19 to 24 August, and that the clutch was complete. In the northern part of its range two eggs seem more normal (Bent 1940; Skutch 1972; Wetmore 1968; Smithe 1966), whereas in the eastern part one egg only is the general rule (ffrench 1973; Haverschmidt 1955; Pinto 1953; Mitchell 1957).

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An undescribed display of the Red-crested Korhaan *Lophotis ruficrista*

by K. A. H. Cassels and H. F. I. Elliott

Received 27th July, 1975

Although a note, on which this short paper is based, was made at the time and the incident was also recorded on 8 mm colour film, no account of it has yet been published nor have we been able to trace a description of any similar performance by an African bustard, although Archer & Godman (1937) record

what may have been an ambulatory display of the same type on the part of a White-bellied Korhaan *Eupodotis senegalensis*. On the other hand the spectacular aerial display of *Lophotis ruficrista* is well-known (Roberts 1940; Prozesky 1970; Newman (Ed.) 1971).

On the morning of 28 October 1971, just after the first storms of the rainy season, K.A.H.C. when a mile from Okaukeujo Camp on the way to the South Gate of Etosha National Park, S.W. Africa, noticed a male Red-crested Korhaan close to the road, its crest raised and very eye-catching, so turned and stopped his vehicle to watch it. Suddenly a rhythmic clicking began (presumably the same as the rhythmic bill snapping recorded in aerial display, but without the accompanying ventriloqual whistle) and the bird began to perform in a very particular manner. It circled a bush with the nearside wing drooping and the offside wing raised, the body level but twisted so that the back was displayed to the centre of the circle. Circling in this flattened position induced a regular limping gait and exactly synchronised with this was the metallic clicking, apparently made with the bill. On each circuit the bird would stop at the same point on the left of the circle, as viewed from the car, and stare at the centre of the clump of bush, then take about four slow steps backwards, raise his crest to the maximum and set off again on another circuit. The performance went on for three to four minutes and had a very peculiar mesmeric, almost sinister quality, perhaps equivalent to the "secretive manner" in which the White-bellied Korhaan watched by Archer (*op. cit.*) performed its ambulation, which also involved moving around as well as through patches of bush. On this occasion, however, no female was observed, although the display must surely have had a territorial significance.

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Some overlooked and doubtful records of birds from Timor

by Murray D. Bruce

Received 7th May, 1974

A review of the literature of Timor's avifauna has revealed three records not listed by Mayr (1944), two requiring confirmation, and two records of Bacelar (1958) considered herein to be of doubtful validity. Unfortunately under present conditions, it has proved impossible to check the relevant material in the Museum Bocage, Lisbon, nor have attempts to obtain information from the Museum authorities been successful (G. F. Mees *in litt.*).

Sula dactylatra personata, Masked Gannet. Recorded by Cabanis & Reichenow (1876: 329) and listed by Hellmayr (1916: 104). This species would probably be classed as a vagrant to the Lesser Sunda Islands, but for the discovery of a breeding colony on Gunung Api (van Bemmel & Hoogerwerf 1940; C. M. N. White pers. comm.). Additional field work may show it to be

more widespread in this area, as are *Sula sula* and *S. leucogaster*, both of which also breed on Gunung Api.

Tadorna radjah, White-headed Shelduck. There is a sight record by Forbes (1885: 453) of this unmistakable species, which is found to the north in the Moluccas and south in Australia (Delacour 1966: 243). It may be a straggler onto the small lakes of Portuguese Timor.

Falco s. subbuteo, Hobby. The normal eastern limits of its winter range in Asia are Burma and S. E. China (Vaurie 1965: 225), with one old record of a straggler to Java (Mees 1971) and one for Timor (Bacelar 1958). As certain plumages of *F. subbuteo* and *F. longipennis* are quite similar, they could be easily confused (Mees *in litt.*). *F. longipennis* is known by several records from Timor.

Hemiprocne c. comata, White-whiskered Tree Swift. Recorded by Bacelar (1958) but "no *Hemiprocne* is known to occur on Timor, and if one occurred, *H. comata* would be less likely, on grounds of its known distribution, than *H. mystacea* and *H. longipennis*" (Mees *in litt.*). The nearest part of this tree swift's range is Borneo. The possibility of mislabelling of the single specimen seems likely.

Parus major, Great Tit. Recorded by Sousa (1883) as "*Parus cinereus*"; a "*Parus timorensis*" was observed to be "not uncommon" by Forbes (1885: 459). Hellmayr did not see a specimen from Timor (1914: 40). *P. m. cinerus* is recorded from Java to the neighbouring islands of Alor and Sumba (Snow 1967: 107). Although the latter islands are the eastern limit of a number of Asian genera, e.g. *Dendrocopos*, *Rhinomyias*, *Terpsiphone*, *Anthreptes* and *Gracula*, the possibility of *Parus* occurring on Timor should not be ruled out entirely. If it does occur, it is probably rare and localised. A similar situation is that of the rare and local *P. m. sarawacensis* of Borneo, discovered in the 1880s and not seen again until 1956 (Smythies 1968: 478).

ACKNOWLEDGEMENT

I am grateful to Dr. G. F. Mees for discussing the doubtful records of *Falco subbuteo* and *Hemiprocne comata*.

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Association between Redwinged Starlings *Onychognathus morio* and Klipspringers *Oreotragus oreotragus*

by Valerie Gargett

Received 20th May, 1975

Three records, spanning ten years and 20° of latitude, occur in the literature, of Redwinged Starlings *Onychognathus morio* perching on and pecking Klipspringer *Oreotragus oreotragus*; two are for Kenya and one for the Matopos, Rhodesia (Hatton 1963; Lee 1963, 1972; Angwin 1971). (A fourth record, from northern Tanzania, has been published by Gordon 1974—Ed.). The behaviour of the starlings in each case was similar to that of oxpeckers *Buphagus* spp. and the Klipspringers appeared fully accustomed to it. The assumption was that ticks or other parasites were being removed and eaten by the birds.

An unpublished manuscript lodged at the National Museum, Bulawayo, Rhodesia, describes in detail another such incident observed on 25 October 1970 in the Matopos Game Park, when one male Redwinged Starling appeared to be removing and eating bloated ticks from a group of four Klipspringer for about 15 minutes (Bean in MS). The writer suggested that the starlings were occupying a vacant niche because oxpeckers do not occur in the Matopos although the area supports much game and is heavily infested with ticks. The evidence, however, perhaps points to a slightly different conclusion.

On six occasions I have watched a pair of Redwinged Starlings climbing over Klipspringer in different localities in the Matopos as follows:— 15 September 1970, 15.40 hrs.; 23 October 1970, 10.30; 17 August 1971, 12.15; 10 May 1972, 11.55; 28 February 1973, 13.10; 28 February 1975, 17.25. On each occasion the Klipspringers were standing or lying on boulders in full view. On the first, they had been noticed over half an hour before the starlings flew on to them. The standing male Klipspringer received the most attention from both starlings, twice shaking his head when both birds were on it so that they flew off momentarily, and once flicking his tail when a bird perched on it. The birds worked over both animals for some 12 minutes, probing into the ears, under the tails and bellies and over the foreheads, even hopping backwards down the muzzle to peck round an eye. Their actions suggested they were removing and swallowing ticks, as described by Bean (*op. cit.*), although this could not be positively confirmed even with the aid of binoculars.

These records suggest that where Klipspringers and Redwinged Starlings share the same habitat, the starlings not infrequently exploit this food source, particularly perhaps during their breeding season, and that the association may well provide a significant supplement to their diet.

Redwinged Starlings are common in all areas of the Matopos, whether in flocks or as nesting pairs. All the records quoted from Kenya and Rhodesia, however, refer to pairs, apart from Bean's, which refers to a single bird. Although there are both small and large antelope in the Matopos National Park, including Sable *Hippotragus niger*, Reedbuck *Redunca arundinum*, Wildebeest *Connochaetes taurinus*, Impala *Aepyceros melampus*, Duiker *Sylvicapra grimmia*, Steenbuck *Raphicerus campestris* and Bushbuck *Tragelaphus scriptus*, the Park staff have never observed starlings perching on them, and there are apparently no published records of Redwinged Starlings on large mammals.

Redwinged Starlings and Klipspringers do, of course, frequent the same rocky habitats where *Buphagus* spp. would not be expected to occur. In Zambia oxpeckers avoid smaller antelopes such as members of the Cephalophinae and Neotraginae and even the somewhat larger Reduncinae (Benson *et al.* 1971: 303), and this seems to apply generally elsewhere and certainly in Rhodesia. The relationship between Redwinged Starlings and Klipspringers could thus have developed quite independently in different areas.

Unlike the oxpecker, *O. morio* has no special adaptations for feeding on mammals. However, the claws of many African Sturnidae are strongly curved, and this is certainly noticeable in *O. morio*, so that perhaps these members of the family are conveniently pre-adapted to exploit a niche which is similar to but different from that exploited by the oxpecker. At the same time it does suggest how the more specialised *Buphagus* first evolved.

ACKNOWLEDGEMENT

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Primary moult of *Tringa brevipes* and *T. incana*

A. J. Prater and J. H. Marchant

Received 14th July, 1975

INTRODUCTION

Bent (1929), who was subsequently quoted by Dement'ev & Gladkov (1951), has described the plumage sequence and moult patterns for the Grey-rumped Sandpiper *Tringa brevipes* and the Wandering Tattler *T. incana*. Witherby *et al.* (1940) also described the moult of *T. incana*. No other accounts of their moult can be traced. In brief, they are all in agreement that primary moult of adults takes place mainly between October and January (sometimes February); also no mention is made that first winter birds moult the primaries.

During the preparation of an ageing guide to Palaearctic and Nearctic waders we examined the study skins of these two species for plumage characters in the British Museum, Natural History, at Tring. The state of moult of each bird was noted and it was realised that certain features of primary moult had not been recorded previously. No differences were found between the patterns of moult of the two species and therefore in view of the small sample size of moulting birds (seven immature and 12 adult *T. brevipes* and 15 immature and nine adult *T. incana*) they were considered together. Primaries are numbered descendently.

Table 1 Primary moult of *Tringa incana* and *T. brevipes*

(a) *Adults*

number with	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*
all old	8	7	1	1	0	0	0	0	0
moulting	0	1	2	6	1	2	7	2	0
all new	0	0	0	0	0	0	2	10	12
Avg. moult score	0	0+	4	22	(41)	32	48	49	50

(b) *Immatures*

	First winter		*First summer*		*late winter*
	Aug.–Dec.	*Jan.–Mar.*	*Apr.–June*	*July–Sept.*	*undated*
all old	55	2	0	0	0
inner old outer new or moulting	0	2	1	7	3
inner new or moulting middle old outer new	0	2	1	3	2

RESULTS

Adults: Table 1a presents a summary of the adult moult pattern. Primary moult commences in late September or October (one bird had just started at the end of September) and almost the entire population is moulting between November and late January. By early February, however, some birds have completed growth of the outer primary; the earliest date for this being 6th February. By March most birds have completed moult, although one collected on 17th March was still growing the outer two primaries in each wing.

All adults in April had completed primary moult and were subsequently moulting the body feathers into summer plumage. From the state of wear of the primaries in birds completing moult and from the pattern of growing feathers in other birds it was clear that some individuals (5 out of 21) had suspended moult during the early winter (November/December), the point of suspension varying from primary 3 to 7.

Immatures: Table 1b summarises the data available. All specimens taken after December showed partial primary moult, the timing of which was variable, for while the earliest had just started on 8 January another had not started on 3 February. The first birds to have completed growth of their outer primaries had done so by mid-March but many others had completed much later, some not until the middle of August. The extent of renewal is variable but proceeds descendently from the middle of the primaries. In birds with symmetrical moult, growth started with primary 4 (twice), 5 (3 times), 6 (7 times), and 7 (5 times). Five birds had asymmetrical growth starting at primaries 4/5 (3 times) and 3/4 and 4/6 on single occasions. In addition to moulting the outer primaries many first year birds (8/22) had renewed also at least one of their inner primaries (also moulted descendently). Active moult may therefore occur at two centres in the primaries. There were indications from two birds that the pattern may be even more complex and variable than so far described; one had not renewed any outer primaries and the other had completely renewed all primaries, although in the latter the pattern of doing so (by moulting descendently from inner and midwing centres) is different from that of the adults and leads to a different pattern of wear.

DISCUSSION

Although the pattern of moult observed in adult *T. brevipes* and *T. incana* if similar to that already described, the partial primary moult of first wintes birds does not seem to have been recorded before. Full primary moult or

waders in their first winter has been known for many years, e.g. *T. macularia* (Bent, 1929). The phenomenon of moulting the outer primaries has only recently been described in several waders (mainly *Tringa* spp.) wintering in East and South Africa (Pearson 1974: Tree 1974); it has not been recorded from many species elsewhere, although our studies have shown that it occurs in *Limicola falcinellus* (some of which, like *T. brevipes* and *T. incana*, winter in the western Pacific). The reason for this moulting pattern might appear to be the considerable wear to which the outer primaries of trans-equatorial migrant waders, particularly in immature birds, are usually prone. Many other species, however, which become just as worn as *T. brevipes* and *T. incana*, do not undertake a primary moult, e.g. *T. terek*. The "new-old-new" pattern of the primaries of many immatures in late winter does not seem to have been observed before for any species of wader.

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The affinities of the São Tomé Weaver *Textor Grandis* (Gray, 1844)

by R. de Naurois and H. E. Wolters

Received 8th July, 1975

Endemic to São Tomé, the Giant Weaver-bird *Textor grandis* is fairly abundant and distributed throughout the Island's forests from low altitudes up to about 1,300–1,500 m. As noted by C. Weiss, its discoverer (in Hartlaub 1857), it does not nest in palm trees. This remarkable Weaver is usually placed near *Textor cucullatus*, although Reichenow (1903) erected the monotypic genus *Hypermegethes* for it; this name, however, is an objective synonym of *Hyphantornis* Gray, 1884.

G. E. Shelley wrote (1905: 431): "In habits it closely resembles *Hyphantornis cucullatus*, its common representative on the West African coast". Authors generally seem to have followed this opinion of Shelley concerning the affinities of *T. grandis*, e.g. R. E. Moreau, who said (1960: 319): " . . . *grandis* . . . is . . . clearly very close to *cucullatus*. It has every appearance of being an insular derivative of this polytypic species, which is distributed over most of the Ethiopian Region and has everywhere a nondescript female". But, although there exists an undeniable relationship between *T. grandis* and the *cucullatus* group, the affinity appears to be not so close as has been thought by most authors in the past. There are not only important differences in morphology, but also in ecology and breeding behaviour, as has been noted by one of us (R. de N.) in the field.

Since several "double colonizations" (in the sense of colonizations from presumably common ancestral stock) have taken place in the Gulf of Guinea

Islands, for example *Poliospiza rufobrunnea* and the now extinct *Neospiza concolor* (Naurois in preparation), *Lamprotornis ornatus* and *L. splendidus* on Principe, and perhaps also "*Cyanomitra*" *newtoni* and *Dreptes thomensis* (Amadon 1953) on São Tomé, it is only logical to consider, in the first place, whether *T. grandis* may be the derivative of any of the other Ploceinae existing in the Archipelago. The small island of Annobon is not inhabited by any Weaverbird, and Principe has only one, viz. *Textor princeps* (Bonaparte), a yellow and brown species, without any extensive black coloration, which, for our purposes, can be disregarded at once. The much larger Fernando Po Island is inhabited by three species of Weavers: *Hyphanturgus m. melanogaster* (Shelley 1887), which, because of its "colonial" habits and altogether different colouring does not need to be considered here; *H. nigricollis po* (Hartert 1907); and *T. c. cucullatus* (Müller 1776). *H. nigricollis* like *T. grandis* does not nest in colonies, and its back is yellowish green; but it is to be found mainly in the lower, more or less cultivated parts of the country, in ecological conditions which are not all the same as those in which *grandis* lives (Eisentraut 1973). It builds a suspended nest with a rather long entrance tube, which differs greatly from the nest of *grandis*. Moreover, the colour-pattern of its head (in males and females) differs strikingly from the uniformly black head (nape and throat included) of the São Tomé Weaver. The case of *T. cucullatus* will be discussed below. However, it may be noted here that in Fernando Po this bird is quite typical of, if a little smaller than, the nominate race, with a very well delimited black "V" on its bright yellow back.

São Tomé itself, apart from *T. grandis*, has 3 Ploceine species:—

1) *Thomasophantes sanctithomae* (Hartlaub, 1848), a forest-dwelling bird, with habits of its own and a peculiar nest; also has a rather aberrant colouring and plumage pattern for a ploceine: it obviously has nothing to do with any *Textor sensu stricto.*

2) *Textor velatus peixotoi* (Frade & Naurois, 1964) a savanna bird living only in the northern part of the Island, which closely resembles *T. v. katangae* and has a green back; its nest is suspended and neatly woven, and it breeds singly, or at most two or three pairs associate for nesting in the same tree.

3) *Textor* (*cucullatus*) *nigriceps* (Layard 1867): breeds in the mangroves of the North, where two colonies have been recently discovered (Naurois in preparation); and takes the place of *T. c. cucullatus* of Fernando Po and the West African mainland savannas.

Thus, among the Ploceine weavers of the islands in the Gulf of Guinea, three forms only, *T. velatus*, *T.* (*cucullatus*) *nigriceps* and *T. c. cucullatus*, could possibly be regarded as representatives, in the savanna of São Tomé, of the same stock as that from which *T. grandis*, in the forest, might have branched. But in order to decide whether *T. grandis* is in fact at all closely related to one of the above-mentioned savanna weavers, we should consider to what extent the species in question are similar in pattern and behaviour and whether, in spite of pronouncedly divergent evolution, there are any significant traits clearly betraying a common origin. For instance, the two *Lamprotornis* of Principe, *splendidus* and *ornatus*, are similar enough to be certain that the second, a good endemic species, has branched off the evolutionary line that has given rise to the first one. The case of *Poliospiza rufobrunnea* and *Neospiza concolor*, both very well marked endemic forms (the second being highly differentiated, although one of us (H.E.W.) prefers not to separate it generically from *Poliospiza*), is a still more convincing example of two lines stemming from an unknown primitive ancestor.

Nothing as definite can be found in the group of Ploceine Weavers in the Gulf of Guinea. *T. velatus peixotoi* is a poorly marked subspecies; and *T.* (*c*). *nigriceps* is little (if at all) different from the southern African *nigriceps*. Both are evidently rather recent colonists. *T. grandis*, on the contrary, must be the product of a long process of speciation, having become the "giant" among the Weaver-birds. Unfortunately, in these weavers, similarities and differences are of so unequal a value and are so much intermingled, that they are of little help in tracing any possible ancestral relationships.

T. grandis nests singly and in this regard is nearer to *velatus* than to the fully "colonial" *cucullatus* and *nigriceps*. On the other hand, although all four forms build "kidney-shaped" nests (in the sense of Crook 1963) the enormous ball made by *grandis* with its rather untidy external surface looks more like the *nigriceps* nest, although it lacks even the shortest protruding entrance tunnel. All four nests are provided with a "ceiling" and an inside-lining, but only the three smaller and lighter birds attach their nests to down-hanging twiglets, as especially *velatus* does and less regularly *T. c. cucullatus*; the latter, however, may use (as in Senegal) stems of reeds, which are not down-hanging (Naurois in preparation). *T. grandis*, on the other hand, uses multi-branching forks in such a manner that the rigid twigs are laced into the outer layer and the whole structure is supported from below and fixed, instead of being freely suspended in the air. In fact the nest is so well hidden in the depth of the foliage, that watching courtship and display becomes nearly impossible.

Morphological comparisons also reveal contrasts. The heads are wholly black in *grandis* and *cucullatus* (incl. *nigriceps*), whereas the black colour covers only the sides of the face and throat in *velatus*. Conversely the backs of *grandis* and *velatus* are green, whereas they are yellow and black (with two very different patterns) in *cucullatus* and *nigriceps*. The admixture of chestnut may also be noticed: it is of a deep colour on breast and collar of *grandis*, resembling the more or less dense wash around the "bib" of *cucullatus*, but there is no corresponding coloration in *nigriceps* and *velatus*. It is difficult to decide which of these features is most important for reproductive isolation. Is it the black mask whose effect is enhanced in agonistic postures by contrast with the yellow back, or is it the colour and the pattern of the back, when males are hanging upside-down from twigs or from the nest, not only displaying for expected females, but also, in mixed colonies, exhibiting their specific identity to birds of other kinds? All the components of these breeding activities have been analysed in thorough detail by J. H. Crook (1962) and N. E. Collias and E. C. Collias (1971), but to a great extent these authors have concentrated upon intra-specific relations. What is crucial in the present inquiry are the *signals*, such as calls (outside the scope of this paper), and the colour-pattern or behavioural designs that have an inter-specific function: being inherited, they are the essential tests in a phylogenetical investigation.

As no satisfactory results concerning the affinity of *T. grandis* could be arrived at by the foregoing comparisons, it seemed necessary to extend them to other Ploceine Weavers of Africa. Excluding species with thoroughly different colour-patterns (in either sex) and types of nesting, are there any solitary nesting forms with kidney-shaped nests, black heads and green backs (with some admixture of chestnut), that have a closer similarity to *T. grandis*? Strictly speaking we have found none, but there are at least two species deserving consideration. The first of these is the little known *Sitagroides alienus* (Sharpe 1902) which in spite of its much smaller size, has some similarity with *T. grandis*, being an inhabitant of moist forest and a

solitary nesting bird, black on the head, chestnut on the breast and a dull, deep green on the back. But according to the descriptions we have read, its nests seem to be of a shape and texture that would differ profoundly from the one described above for *T. grandis*, and one of us (Wolters 1970) has expressed the view, that this weaver, placed in the genus *Hyphanturgus* by Chapin (1954), may eventually prove to be closer to *Symplectes*, a genus very different indeed from *T. grandis*.

The second and last species to consider is *Textor melanocephalus* (Linnaeus, 1758), whose range in the West African savanna extends south to forested districts and to gallery forest in southern Nigeria. Exploring the Niger Valley at Onitsha, W. Serle (1957) noted it as " . . . nesting on a sandbank in mid-stream, 2 or 3 pairs at a place in the straggling Mimosa bushes. On 15 May at one such colony of three nests two held two young each and one a fresh egg . . . On 24 May, at another colony of three nests one held young and the others clutches of two and three respectively . . . " This quotation refers to the poorly differentiated form *T. m. capitalis*. Colonial nesting seems to be the general rule in this species, but we learn that there are other reports of very small breeding units: thus Chapin (1954) speaks of *T. melanocephalus* somewhere in Zaire, very possibly in the Lake Kivu area "nesting in small groups on tall reeds and . . . bushes or small trees not far from water". In short, *T. melanocephalus* appears to be a weaver that is not everywhere strictly "colonial". Moreover, its nest is kidney-shaped with a ceiling, and its plumage-pattern includes characters that are diagnostic for *T. grandis:* black head, green back and some chestnut on upper-breast. Among the forms possibly allied to *grandis* it therefore seems to be the closest.

This conclusion is, to a certain extent, supported by two further considerations:

(1) The eggs of *T. grandis* (1 or 2 in number) are of a rather pale blue, completely unspotted (not yellowish white, as erroneously stated by Bocage, 1891 and 1903, p. 80, probably as a consequence of some confusion among the items sent from São Tomé to Lisbon by Francisco Newton). The eggs of

Table 1 Dimensions (measurements by R. de N.; males only)

	Wing (*W*)	*Tarsus* (*T*)	*Tail* (*Q*)	*T*/*W*	*Q*/*W*
T. grandis (8 to 10 specimens)	111–115 (113)	29–35 (32)	64–72 (69)	0·26–0·315 (0·285)	0·55–0·65 (0·61)
T. c. cucullatus	—	—	—	—	0·58–0·605
Fernando Po (6 spec.)	85–86 (85·5)		50–52 (50·5)		(0·59)
Cameroun (6 spec.)	86–90 (88)	—	49–54 (51)	—	0·56–0·615 (0·58)
Nigeria (10 spec.)	86–102 (90·5)	24–27 (25·5)	—	0·255–0·295 (0·28)	—
Ghana, Liberia (12 spec.)	82–91 (87)	22–26 (24·5)	—	0·25–0·305 (0·28)	—
T. c. bohndorffi (9 spec.)	80–91 (87)	21–23 (22)	49–54 (51)	0·23–0·285 (0·25)	0·55–0·66 (0·585)
T. c. femininus (6 spec.)	89–92 (91)	21–23 (22)	50–52·5 (51)	0·23–0·26 (0·24)	0·54–0·58 (0·56)
T. c. frobenii (7 spec.)	87–91 (89·5)	21–22 (21·5)	50–51 (50·5)	0·235–0·25 (0·24)	0·555–0·575 (0·56)
T. melanocephalus capitalis (7 spec.)	68–73·5 (70·6)	—	40–46 (42·5)	—	0·585–0·605 (0·60)
T. m. melanocephalus (5 spec.)	75·5–79 (77)	—	46·5–49·5 (48·5)	—	0·605–0·65 (0·63)
T. melanocephalus duboisi (5 spec.)	73–76 (74)	23–27 (25)	42–48 (45)	0·315–0·34 (0·33)	0·575–0·635 (0·605)
T. melanocephalus fischeri (2 spec.)	75·5; 76	24; 25	49; 50	0·32; 0·33	0·655; 0·665 (0·66)

T. cucullatus (2 or 3 in number) are sometimes unspotted, but more generally finely dotted on a variable white to blue or greenish-blue ground. The eggs of *T. velatus* are white or blue, finely speckled with red-brown, very rarely of a uniform yellowish white colour. Much more generally unspotted are the eggs of *T. melanocephalus*, although they also are very variable in colour: grey, dull green or deep brown.

(2) Proportions. In spite of the insufficiency of the material we have been able to examine, we are inclined to believe that it supports a relationship between *T. grandis* and *T. melanocephalus*. As shown in Table 1 nothing definite can be deduced from the values for tarsus/wing ratio (very much the same for *T. grandis* and *T. c. cucullatus*, less so for *melanocephalus*). As far as the tail/wing ratio is concerned, *T. grandis* is intermediate between *cucullatus* and *melanocephalus*, but the figures are identical for *grandis* and the two geographically nearest forms of *melanocephalus: T. m. capitalis* from Nigeria and *T. m. duboisi* from the Congo region.

SUMMARY

Textor grandis, the Giant Weaver of the Island of São Tomé, has usually been considered a very close relative of *T. cucullatus*. A comparison of *T. grandis* with other Ploceine weavers of the islands in the Gulf of Guinea and of some similar species of the neighbouring mainland suggests that *T. melanocephalus* may be the closest relative of *T. grandis*.

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First records of Bimaculated Lark *Melanocorypha bimaculata* from Cyprus

by Kenneth O. Horner and George E. Watson

Received 14th July, 1975

Two *Melanocorypha* larks captured on 31 March 1968, are *M. bimaculata* not *M. calandra* as reported by the Palaearctic Migratory Bird Survey to Stagg (1968) and constitute the first records of the Bimaculated Lark from Cyprus. *M. calandra* is a commonly recorded resident below the 1000 foot contour on the eastern and central Mesaöria Plain but scarcer in the southern coastal region. It is a migrant in other areas (Neophytou *et al.* 1970, 1971). No

Calandra Larks were among more than 25,000 birds trapped by professional limers in Paralimni (35° 01′ N, 33° 59′ E) in the spring 1968.

The specimens were prepared in the field as a skin (USNM 549688) and a pickle (USNM 539307). The skinned specimen had small testes, is decidedly rufous, and agrees in colour with two females collected in early June from Djebel Sanyn, Lebanon, identified by Vaurie (1951) as *M. b. rufescens*. This race breeds on the nearby Anatolian plateau, Syria, Lebanon and Iraq (Vaurie 1959) and is said to winter in Egypt, Sudan and Ethiopia (Moreau 1972). The pickle lacks the rufous pigmentation of *M. b. rufescens* specimens and is darker brown than one March and two May male specimens from Dow Rud, Iran, identified by Vaurie (1951) as *M. b. bimaculata*. This specimen was fixed in formalin and transferred to 70% ethyl alcohol in the field and stored in alcohol in the museum, but it is unlikely that such treatment would have affected its melanin pigments (A. H. Brush pers. comm.). The nominate race breeds from Transcaucasia to southern Iran (Vaurie 1959) and is admitted as wintering in Sudan (Moreau 1972). No comparative spring material is available from the northern portion of its range.

The occurrence of two races of a species new to the Cyprus avifauna in the spring of 1968, raises the question whether the Bimaculated Lark is a chance vagrant on Cyprus or whether it has just been overlooked by collectors and observers. All Calandra Lark specimens from Cyprus in museums should be re-examined and, in future, observers should look for calandra-like larks that lack the conspicuous white trailing edge on the secondaries.

ACKNOWLEDGEMENTS

We are grateful to Mr. John Farrand, Jr., for calling our attention to the identification of the skin specimen, and to the curators at the American Museum of Natural History for the loan of specimens. Our Cyprus specimens were collected with partial funding from the Smithsonian Foreign Currency Program and co-operation with the Cyprus government and local inhabitants of Paralimni. Financial support during the preparation of this note was provided by Virginia Polytechnic Institute and State University and the Frank M. Chapman Memorial Fund.

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IN BRIEF

(a) Lesser Crested Terns in the Gambia

In view of the note by Nielsen (*Bull. B.O.C.* 95: 80–81) on observations during 1974 of *Sterna bengalensis* at Cape St. Mary and also at Kartung near the southern border of the Gambia, it is worth recording that A. G. Verrall and I saw 28 birds of this species in a large flock of terns on the other side of the Gambia River, near the village of Barra, on 2 February 1974. Other accompanying species comprised *Sterna maxima*, *S. sandvicensis* (but no *S. albifrons*), *Hydroprogne tschegrava* and *Gelochelidon nilotica*. Nielsen does not mention that

Lesser Crested Terns have been recorded passing south over Morocco during the autumn, but he is doubtless correct in suggesting that the Gambian coast provides at least part of the previously unknown winter quarters of North African populations.

21 June 1975 I. A. Batten

(b) The pair-bond in *Excalfactoria*

Frost, discussing the affinities of *Margaroperdix madagascariensis* (*Bull. B.O.C.* 95: 67) states without reference or further comment that *Excalfactoria* is polygynous. I have intermittently studied the behaviour of Painted Quail *E. chinensis* under aviary conditions (Harrison, Restall & Trollope 1965, *Avicult. Mag.* 71: 127–130 and Harrison *Avicult. Mag.* 71: 176–184 (1965); 74: 7–10 and 83–84 (1968); and 79: 137–139 (1973)) and am convinced that this species is normally monogamous.

It appears to have a strong and persistent pair-bond and the male attends the female closely and takes a full share in the care of the young. When I put an additional female with a pair, she was persistently attacked by the paired female and had to be removed. I am aware that in large enclosures with a plentiful supply of food two females are sometimes kept with a single male and that both may produce fertile eggs, but I suspect that this would not usually occur under natural conditions, and did it occur might not lead to successful breeding by both females. Enforced polygyny has been recorded under captive conditions with a number of non-passerine and passerine birds which are normally monogamous. In the circumstances it would be interesting to know if polygyny has ever been proven in either *Excalfactoria chinensis* or *E. adansoni* under natural conditions.

1 July 1975 C. J. O. Harrison

(c) Status of *Ardea novaehollandiae* in the Lesser Sunda Islands

White (*Bull. B.O.C.* 94: 9–11) argued that in "Wallacea" (the islands between the Sunda and Sahul shelves) this species is probably represented only by non-breeding migrants from Australia. While he may be correct where the Moluccan Islands are concerned, he appears to have overlooked that Verheijen (*Ardea* 52: 194–201) listed the species as a breeding bird on Flores. Verheijen did not supply much supporting information, but his collection, now in the Rijksmuseum van Natuurlijke Historie, contains two eggs from Flores, one collected at Benteng Djawa in July–August 1957, measuring 44·1 × 34·2 mm, weighing 1691 mg, and one collected at Dampek, 11 July 1958, 47·6 × 33·5 mm, 1940 mg.

Moreover, in 1969, Verheijen, when visiting Roti island, found *Ardea novaehollandiae* the commonest heron, nesting close to villages. A cl/4 collected at Namo-Dale, 16 March 1969, measures 46·2 × 35·2, 46·6 × 35·1, 45·9 × 36·1, 43·7 x 36·1 mm, weights in the same sequence 1941, 1912, 1934 and 1822 mg. A very small pullus was also collected in the same locality on 23 March. Publication of these details, and also of a paper by me on the birds he collected, has been much delayed by circumstances beyond our control, but Verheijen's paper is now in press (*Zool. Meded.*).

It is thus clear that at least on some of the Lesser Sunda Islands this heron breeds commonly. It is worth adding that, apart from Roti and the islands listed by White and also by Van Bemmel (*Treubia* 19: 323–402), our collection contains mounted specimens from Leti (♂, 7 June 1866), Ambon (♂, 17 May 1865) and Ceram (unsexed, 9 Sept. 1873).

4 July 1975 G. F. Mees

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The six hundred and ninety-sixth meeting of the Club was held at Imperial College, London, S.W.7 at 7 p.m. on Tuesday, 16th September, 1975.

Chairman: Prof. J. H. Elgood; present 23 members and 13 guests.

Lord Medway spoke on the Ornithology of the New Hebrides, describing his own observations there and giving a synthesis of the other information available on the avifauna of the area, illustrating his address with slides.

The six hundred and ninety-seventh meeting of the Club was held at Imperial College, London, S.W.7 at 7 p.m. on Tuesday, 18th November, 1975.

Chairman: Prof. J. H. Elgood; present 17 members and 4 guests.

Mr. Patrick J. Sellar described the origins and purposes of the British Library of Wildlife Sounds. He then played a number of tape recordings from their archives of particular scientific interest and illustrative of the range of their material.

Forthcoming Meetings:

Tuesday, 20th January, 1976 at 6.30 p.m. for 7 p.m. at The Goat tavern 3 Stafford Street, London W.1 (between Old Bond Street and Dover Street, near Green Park tube station).

Dr. Janet Kear will speak on "Living Museums (Zoos) are worthwhile but are re-introductions to the wild?" The cost of dinner is £2·10 (including service and V.A.T.) and cheques must be sent to the Hon. Secretary before the meeting.

Tuesday, **9th** March, 1976 at 6.30 p.m. for 7 p.m., also at The Goat tavern, 3 Stafford Street, W.1. Cheques for the cost of dinner (£2·10 a head) must be sent to the Hon. Secretary before the meeting. Please note that the date of this meeting has had to be changed from 16th March, 1976.

Tuesday, **4th** May, 1976 (seven hundredth meeting of the Club). A short symposium on African birds, at which the speakers will include Mrs. B. P. Hall, Sir Hugh Elliott, Bt., O.B.E. and Mr. C. W. Benson, O.B.E.

The status of *Eos goodfellowi* Ogilvie-Grant

by Michael P. Walters

Received 13th August 1975

Ogilvie-Grant (1907) described this "species" of lory from two living specimens brought back from Obi in the Moluccas by Walter Goodfellow. The skins of these birds were apparently not preserved, but Ogilvie-Grant described them as being most like *Eos bornea* (at that time known as *E. rubra*) "but with the ear-coverts lavender-blue and the back and thighs purplish-blue". One of the birds had the feathers of the middle of the breast

deeply edged with blue while the other has these parts uniform red. No-one else appears ever to have seen any specimens of this bird.

The genus *Eos* is fairly well distributed over the Moluccan and West Papuan area, occupying all the principal islands and consisting of what would seem to be two "younger" species, *E. bornea* and *E. squamata* with their subspecies, occupying the centre of the area; three "older" species occurring on small groups of islands on the periphery of the area—*E. cyanogenia*, *E. reticulata* and *E. histrio*; and *E. semilarvata* which occurs in the mountains of Ceram (or Seran), the lowlands of which are occupied by a race of *E. bornea*. This is the only instance where two species are known for certain to occupy the same island. The island of Obi, where the specimens of *E. goodfellowi* were collected, is occupied by *E. squamata obiensis* an endemic race.

Holyoak (1970) sought to identify *E. goodfellowi* with juveniles of *E. bornea*, which he examined in the collection of the British Museum (Natural History), and this identification is repeated by Forshaw (1973) without further comment. Siebers (1930) also expressed the same opinion. All appear to have overlooked the obvious fact that *E. bornea* is not known to occur on Obi. The important features in the description of *E. goodfellowi* are that it has bluish ear-coverts and blue on the belly, which is a characteristic of juveniles of *E. bornea*. However, these characteristics are also present in *E. semilarvata*, and the blue-violet ear-coverts are present in adults of all members of the genus except *bornea* and *squamata*. This suggests that it is an earlier pattern and that *E. bornea* has retained in the juvenile what is in effect an earlier plumage of the group.

To accept *E. goodfellowi* as merely a juvenile of *E. bornea* would require that one accepted the existence of a hitherto unknown population of *bornea* on Obi, possibly in the mountains (the highest peak on Obi is nearly 6,000 ft.). This population, separated by a greater stretch of sea than any other population of the species, would probably represent a distinct race, for which the name *Eos bornea goodfellowi* would be available. While it is possible that *E. squamata* bears the same relation to *E. bornea* on Obi as *E. bornea* does to *E. semilarvata* on Ceram, a more reasonable suggestion would be that *E. goodfellowi* is an old (possibly extinct?) species living in a similar situation to, and possibly related to *E. semilarvata*.

An examination of the specimens in the British Museum (Natural History) on which Holyoak bases his identification suggests to me that *E. goodfellowi* is not a juvenile of *E. bornea*. Ogilvie-Grant in his original description distinguishes between the two birds he saw; one had the ear-coverts and the belly blue; the other, which he supposed to be the older bird, had no blue on the belly. This suggests that in *E. goodfellowi* the blue belly is a juvenile characteristic which disappears upon maturity. If *goodfellowi* were an immature *bornea* one would expect the blue on the belly of *bornea* to disappear before the blue on the ear coverts, but in the specimens examined by Holyoak this does not appear to be so. One of these (from the Kei Islands) has distinct lavender-blue ear-coverts and a fair number of violet feathers on the belly; another (from the Aru Islands) has only slightly less violet on the belly but the lavender tips to the ear-coverts are so faint as to be barely discernible, and I do not think would be visible unless the bird were in the hand. Furthermore, these juveniles have a great deal of brown on the belly as well as blue, in fact on the skins discussed above the brown is more obvious than the blue. This brown colouring is a characteristic of juvenile *Eos* but neither Holyoak

nor Ogilvie-Grant comment upon it. Had there been any brown on the live *E. goodfellowi* it seems unlikely that Ogilvie-Grant would have failed to notice it and realise that this signified immaturity.

It might be useful at this point to note the existence of various other specimens of *Eos* in the museum's collection, besides the one from the Aru Islands noticed by Holyoak, which were stated to have been collected on islands where the species does not normally occur. These anomalies are generally attributed to errors by the collector as to which island the specimen came from (which is possible), but no one seems to have considered the possibility that these were simply accidental vagrants on the "wrong" island. If this is so, then there is just a possibility that the specimens of *Eos goodfellowi* were not native to Obi after all, but the fact that there were two of them in the same place and time makes this seem unlikely. However, until further specimens can be obtained, the true status of *E. goodfellowi* can never be proved.

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The first records of the Mongolian Plover, *Charadrius mongolus* Pallas, for Mongolia

by G. Mauersberger

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Peter Simon Pallas has described, in his famous report on the expedition undertaken by him, from 1771 to 1773, across Siberia ("Reise durch verschiedene Provinzen des Russischen Reiches", vol. III, 1776, p. 700), a plover which he named *mongolus*, expressing by this epithet his belief that it breeds in Mongolia. He discovered this bird between 28 and 31 May 1772, on the Tarey-nor, a vast area of salt marshes (once a lake) several miles south of Kulussutai, where he obtained "many rare and new birds" (*ibid.* p. 220). Kulussutai lies in south-eastern Transbaikalia at about 50° 15′ N, 115° 40′ E, some 40 kilometres north of the Mongolian border. Ridgway (1919) has correctly fixed it as the restricted type locality. Though Pallas states that he found the plover not uncommon, but solitary, "around salt lakes toward the border of Mongolia" (p. 700: circa lacos salsos versus Mongoliae fines), he is not likely, judging from his itinerary, to have met with it elsewhere. Moreover, in his text, he does not mention any further encounter. However, none of his records can be from Mongolia (then a Chinese province) since he did not cross the border, which has remained stable since the Treaty of Nerchinsk (signed in 1689). Pallas turned back on 5 June and reached the shore of Lake Baikal on 8 July 1772.

Nevertheless, several ornithologists have listed this plover for Mongolia (the Mongolian People's Republic of to-day). The last to claim this are, to my knowledge, Hartert (1920), Peters (1934), and Gladkov (1951). On the other hand, Kozlova (1930), Vaurie (1964, 1965), Piechocki (1968) and Zevegmid *et al.* (1974), who give the most recent list of vertebrate species recorded for the Mongolian People's Republic, do not even mention the

species. This is strange enough as members of the east Siberian populations (nominate *mongolus* and *stegmanni*), which winter in South East Asia, might be expected to occur on migration at least in eastern Mongolia. The two records from Tarey-nor in south-eastern Transbaikalia, the westernmost of all, confirm this. Many years after Pallas, on 12 May 1856, G. Radde (1863) saw a flock of about 50 Mongolian Plovers in the same locality where the species, apparently, has never been found since.

On 12 June 1972, I watched a male of this species in a salt marsh in the Gobi desert about 25 km north-east of the Gobian Altai and 30 km north-west of Dalandzadgad (at c. 43° 40′ N 104° 10′ E). The plover could be determined as to subspecies, as it had the wholly black forehead characteristic of *C. m. atrifrons*. So, no less than 200 years (and a fortnight) had elapsed for Pallas' assumption that the species is "perhaps more frequent in the Mongolian desert more to the south and on the alpine plain of the Gobi" (*Zoographia Rosso-asiatica* 2, p. 137) to be substantiated, though my record applied to a different subspecies.

This is, evidently, not a casual occurrence. D. Förster, Leipzig, reported (*in litt.*) that he had seen in the same locality (somewhat earlier, on 24 to 28 May 1968) what likewise appeared to be Mongolian Plovers of this subspecies. He describes the birds as lacking the black throat line and having black foreheads with only a small white spot on either side. These features and the distinct sexual dimorphism clearly indicate *atrifrons*. Förster and L. Georgi, who kindly left me their notes for publication, encountered about five pairs on rather bare patches in the rubble steppe. However, he failed to see any there in late July 1971, nor had I met with them in early June 1969. But if it is a regularly breeding bird in this locality, it would considerably extend the known range of the *atrifrons*-group and, thus, narrow the gap between the two subspecies. Nominate *mongolus* breeds in the Stanovoi and Verkhoyansk ranges in eastern Siberia (but not in the Yablonovoi as stated by Gladkov 1951). On Gladkov's map the range of *mongolus* is extended westward to the north-eastern Baikal area. This is, in the text, erroneously based on Stegmann (1936), who, in fact, does not record *mongolus* (but *morinellus*).

The northernmost points at which *atrifrons* had ever previously been found were Lake Kuku-nor and the upper Sining-ho valley in the Nan Shan range (Stresemann *et al.* 1938). The Gobian locality is about 810 km further north (and about 1150 km south-west of the type locality of the species). On Cheng's (1955) map, however, the northern limit of *atrifrons* runs up to about Hami.

Judging from the ecological data given by Gladkov 1951, Kozlova 1961, Meinertzhagen 1927, Schäfer 1938 and Stresemann *et al.* 1938, nesting in the Gobi is not impossible. Whereas nominate *mongolus* and *stegmanni* breed in the alpine tundra, *pamirensis* and *atrifrons* are known to nest in mountain steppes, rubble-covered high valleys (Turkestan), bleak desert steppes and slopes (High Tibet), gravel banks (Kuku-nor), riverside marshes at altitudes of 3900 up to 4500 m (Ladak and Kashmir), and dry edges of salt marshes (Tian Shan). This latter habitat corresponds to the site where I saw the bird.

At that site, one pair each of *Charadrius dubius* and *C. alexandrinus* were obviously nesting. The adjacent desert steppe was inhabited by a few pairs of *C. leschenaultii*. Moreover, I saw an adult (white-headed) male of *C. veredus*. Thus, no less than five *Charadrius* species occur together here.

It must be stated, nevertheless, that the form described by Pallas has not been recorded for Mongolia as yet.

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An undescribed form of *Merops orientalis*

by C. H. Fry

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Peters (1945) recognized eight subspecies of the palaeotropical bee-eater *Merops orientalis*, and Vaurie (1959) seven. The species is overall green, except for contrasting facial pattern and black pectoral band—features that vary racially as they do in most other *Merops* species. Oriental populations of *M. orientalis* have verditer throats, Arabian ones Prussian blue throats (and foreheads), and the two African races have throats concolorous with the rest of the plumage, bronzy green in *M. o. viridissimus* (Senegal to Eritrea) and moss green in *M. o. cleopatra* (lower Nile valley).

At least 11 specimens in the collection of 85 skins of *viridissimus* at the British Museum (Natural History), Tring, have yellow or yellowish throats, a plumage which I have figured (Fry 1969 Fig. 9) but have not otherwise remarked upon. In some of the specimens the chin and throat are a clear bright yellow, delineated by the narrow black pectoral band and black eye mask and in sharp contrast with the green crown and breast. Yet I can find no reference to this character in the literature, where the throat is always given as concolorous with the rest of the green plumage.

Yellow throated specimens at Tring are as follows.

(a) Chin and throat clear mustard yellow, separated from the black pectoral band by 1 mm of green and from the black mask by 3 mm of green and blue:

1 Unsexed Jebel Ain, 14 January 1914 (B.M. Reg. No. 1919.12.17.869)
2 ♀ Khartoum, 7 January 1904 (1905.12.25.234)
3 ♂ Sinkat, Red Sea Province, 20 March 1914 (1919.12.17.867)

(b) Chin and throat markedly yellower than breast, but with green wash rather than clear yellow:

4 ♂ Khartoum, 11 January 1904 (1905.12.25.235)
5 ♂ Khartoum, – February 1903 (1916.9.20.861)
6 ♂ Jebel Ain, 13 February 1914 (1923.8.7.5856)
7 ♂ Kamisa, Sennar Province, 22 December 1913 (1919.12.17.870)
8 Juvenile ♂ Juga Juga (15 miles NE of El Fasher), 6 May 1920 (1920.12.22.168)
9 ♂ Kosheh, Nubia, 9 March 1900 (1905.6.4.21)

(c) Chin, throat and breast yellowish green (pectoral band black):

10 ♀ Archei, Ennedi, 17 October 1957 (1958.24.2)
11 ♀ Massawa, Eritrea, 13 December 1953 (1954.26.13)

All of these localities are shown in Fig. 1 except Kosheh, which cannot be located. Nubia is a poorly demarcated area north of 8° N and east of 30° E. In addition, a ♀ from Gassam, Senegal, 14 September 1907 (1939.12.9.3133) appears to have a pale yellow throat and the pectoral band very narrow and blueish-black; but it is an unusually prepared-skin in which these features are difficult to assess.

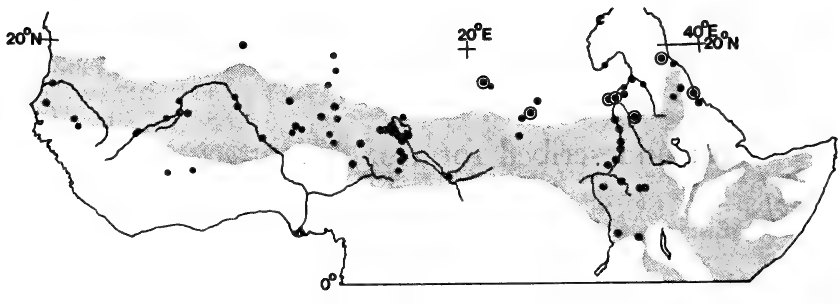

Figure 1. The distribution of *Merops orientalis viridissimus*. Small dots, records from the literature and personal observation; large dots, Tring Museum skin localities; encircled dots, yellow-throated specimens. Stipple: dry woodlands and steppe (after Keay 1959). The southernmost record of *M. o. cleopatra*, on the Nile, is marked by C.

None of 35 skins of *M. o. cleopatra* has a yellow or yellowish throat. Ignoring the atypical Gassam skin, all the yellow-throated specimens of *M. o. viridissimus* occur east of longitude 20° E and within the range 14°–19° N (Fig. 1) (Kosheh may be further south). Ten of the skins are adults taken in December to March and they appear to be in nuptial plumage. From what little is known the breeding season appears to be March to July (Lynes 1925, Fry 1973). "Normal" green-throated birds have been collected at some of the same localities, e.g. Jebel Ain and Khartoum, most of such specimens being outwith the breeding season.

The evidence suggests that there is a taxon of *Merops orientalis* separable from *viridissimus* and *cleopatra*, found in the eastern sub-Sahara north of the dry *Acacia* zone (Keay 1959), and distinguished by the possession of yellow throats at least about the breeding season. Since, however, no other *Merops* species adopts nuptial plumage differing from the off-season plumage, the possibility remains that these yellow-throated birds are a morph (comparable with the yellow-throated morph "*boleslavski*" of the red throated *Merops*

bulocki), for which reason it is unwise on the present evidence to name a new subspecies.

ACKNOWLEDGEMENTS

Mapping of localities in Fig. 1 was greatly facilitated by Mrs. B. P. Hall's privately-circulated gazetteer of African bird localities, and I am most grateful to her for letting me have the use of it. I am also indebted to the staff at the Tring Museum for their courtesy and assistance.

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The Grey Heron of the Banc d'Arguin (Mauritania) *Ardea cinerea monicae*

by R. De Naurois

Received 1st September 1975

The presence of large numbers of herons at the Banc d'Arguin had been mentioned in Gruvel & Chudeau (1909–1911, see Naurois 1959), but evidence of nesting was obtained for the first time by Dr. Tixerant in the beginning of August 1957: chicks and some eggs. The species was identified by R. de Naurois on 3 March 1959 and fresh eggs were found on 30 April of the same year. The distribution, ecology and ethology of this population have since been studied by: R. de Naurois (1959, 1969); J. Dragesco (1961); Ch. Jouanin & F. Roux (1963), who named the subspecies *monicae;* W. von Westerhagen (1970); G. Gandrille and J. Trotignon (1973).

The herons nest only on Arel, on West Kiaone and East Kiaone islets and, since 1968 or 1969, on Cheddit. North of the Banc d'Arguin, *Ardea cinerea* breeds in small numbers in Tunisia, but not in Morocco nor in the Spanish Sahara. South of the Banc no nesting takes place either in the extensive lagoons of the Aftout-es-Saheli (along the coast of S.W. Mauritania) or in the inundation zone of the Sénégal River. Thus the Banc d'Arguin breeding population is quite isolated from the European and North African ones to the north, and still more so from Red Sea and Asiatic ones to the east.

Details of the environment and breeding cycle have been published elsewhere (Naurois 1969), so the present paper is confined to a review of the reasons which led to the recognition of the new race *monicae*, followed by a few observations about the posturing and nesting habits of these herons, some remarks kindly contributed by Mr. G. S. Cowles, about their osteology, and, finally, a discussion of some of the implications.

PLUMAGE AND MORPHOLOGY

When I first saw these Mauritanian herons from far away on 3 March 1959, I was struck by the brilliant white colouring of the face, neck and underparts. I was not acquainted at that time with the African fauna and thought I was perhaps meeting with a tropical form unknown to me. Later, G. Morel and F. Roux, when investigating the marshy areas of the Sénégal Delta, saw

both typical European Grey Herons on migration and birds of the Mauritanian form; in order to ascertain their identification they collected a specimen, and from then on found that they were able to distinguish at a glance, at distances of up to a few hundred metres, the Banc d'Arguin birds from the migrants originating from a long way further north (Morel & Roux 1966).

In describing the Mauritanian race *monicae* Jouanin & Roux (1963) had made particular reference to the whitish race *A. c. jouyi* Clark, which is found in the Far East but is connected with the European *A. c. cinerae* by intermediate forms in the Near East. They summarized the grounds for recognizing a new subspecies as follows:

> ". . . on a découvert a l'extreme occident de son habitatat une population . . . qui, par ses caractères de coloration, est plus proche des *jouyi* d'Extreme-Orient que de la race nominale européenne. Et dans ce cas il n'est pas question d'un gradient continu de dépigmentation . . . Les hérons cendrés des cotes mauritaniennes représentent un stade beaucoup plus poussé . . ."

In these circumstances, it is a pity that we have so far failed to find in the collections we have been able to examine (at Tring and Paris) any specimens of Grey Heron from possible breeding places (on bare, rocky islets) in the Red Sea. If indeed breeding populations exist in that area as reported by Nicoll (Meinertzhagen 1930), it would be most interesting to see whether they have affinities with *monicae* or with the eastern subspecies.

Dimensions: Four breeding adults of *monicae* have been collected and examined; but measurements are available for two specimens only. The corresponding figures for *A. c. cinerea* as indicated in the Handbook of British Birds (Witherby *et al.* 1939) are quoted and also the wing-measurement for *A. c. jouyi.*

	A. c. monicae	*A. c. cinerea*
Wing	395, 422	425–470
		(for *jouyi* 435–470)
Tail	146, 148	155–175
Tarsus	144, 170	135–165
Culmen	121, 135	100–125

It thus appears that wings and tails of the two Mauritanian birds are definitely shorter than their European counterparts. But, of course, no firm conclusion can be drawn from so little data.

POSTURES

Although Mauritanian Herons are extremely shy it is possible, on the West Kiaone Islet, to keep them under observation without disturbing them. The islet, 1 km long, 130 m wide and 10 m high, emerges from the ocean like a vessel. The upper surface, which is nearly horizontal and 3 m thick, lies on a deposit of much softer limestone which gets continually eroded under the combined action of spray and wind. As a consequence, the summit platform tends to collapse around its edges, forming a small cliff 3 m high, below which a scree-like slope covered with large flat blocks, stones and gravel extends down to the shore. By climbing the scree and then (where possible) the rock-face, one can emerge at platform level and get a view of the nesting birds without being detected by them.

It was by following this procedure that I was able to observe something rather striking. Except when bending down over their nests, which are on the

ground, to feed their chicks, the Herons *stretched their necks upright*. It is well known in Europe that a "bird on nest stands up and responds (as part of nuptial ceremony) with a stretching posture, in which head and neck are extended in straight line upwards, then brought backwards and downwards" (Witherby *et al. op. cit.*, p. 127). But in Mauritania the stretching of the neck is not part of a ritual. It might be argued that, being so wary and having seen or heard the approach of a boat, the Herons were simply maintaining for a long time a posture indicating suspicion or fear. But this seems improbable and, moreover, it is apparently contradicted by another observation which I made in the Zoological Garden at Nouadhibou (ex Port-Etienne, Mauritania), where two examples of *A. c. cinerea* and *A. cinerea monicae*, respectively, were kept in captivity in different cages and out of sight of one another. The neck of the first was always in an S-bend, the neck of the second being equally invariably stretched stiffly upwards in exactly the same posture noted in the birds 100 km to the south on their breeding and feeding grounds. It was all very reminiscent of the normal difference of posture between *Cygnus olor* and *C. cygnus*. It is worth noting that Grey Herons in Egypt and the northern Red Sea, as described by Meinertzhagen (1930, p. 440—" . . . neck often erect on ground"), may well tend to adopt much the same posture as their Mauritanian congeners. More observations and comparisons are needed.

NESTING

On the Kiaone and Arel Islets *Ardea cinerea monicae* nests on the bare ground, from which small stones and dust may have been just slightly removed by scratching, and around which a circlet of bones (mainly derived from casualties among the nearby breeding *Pelecanus onocrotalus*) and of ribbons of dried *Zostera* is collected together. On the Cheddit Islet, some 50 km south and in a less desert-like environment, von Westerhagen (1970, p. 214) discovered a rather small colony of Herons whose nests had been placed, like those of *Egretta gularis* and *Platalea leucorodia*, on *Salicornia* or *Suaeda* tufts.

At first sight, there was nothing surprising in such nesting habits, the isles being nothing else than a continuation of the Saharan desert into the shallow waters of the Banc d'Arguin. However, in the light of my discoveries, one problem arose. On the *rocky* islands (Kiaone, Arel), why was there that circlet of bones and vegetable matter around the eggs or chicks? Was it just a sort of survival of the usual habit of building nests on trees or among reeds, having the result of facilitating the location and identification of the nest by each occupant. Or, as discussed by Naurois (1969, p. 247), had the heaps of odd items the advantage of weakening the total reflected radiation from the shining surface of the sand and stones?

Whatever the solution, it later became clear that the use of bare ground (Kiaone and Arel) or of low halophile bushes (Cheddit) did not offer the only possibility of nesting, *faute de mieux*, for the herons. Between the Kiaone and Cheddit islets lies the island of Tidra, 30 km long from north to south, at the northern end of which, not more than a few kilometres from Kiaone, there is a relict mangrove of *Avicennia africana* P. Beauv., 2 or 3 km² in extent (first discovered by F. Roux and investigated by Naurois & Roux, 1965). Here, on trees 3 or 4 m high, I discovered old nests made of sticks, about 2 m above sea-level at high tide, which could be attributed only to *Phalacrocorax africanus* or *Egretta gularis* (see Naurois, 1969, p. 81–82). In 1970, G. Gandrille and J. Trotignon, making another visit to this interesting amphibian milieu,

found colonies of *Phalacrocorax* in full operation (1973). The *Avicennia* branches would certainly have been strong enough to support not only cormorant nests but also the heavier nests of the herons, if the latter had chosen to use them. I have thus come to the following conclusion. Although *Ardea cinerea monicae* habitually feeds over the whole 500–800 km^2 of mud flats and *Zostera* "meadows", for nesting purposes it does at times use the carpet of low vegetation in the south (lat. 19° 30′) but prefers to nest on the bare ground in the north (lat. 20°) and avoids the trees which are available near the centre of this stretch of coast. I do not know of any exactly parallel example of this kind of adaptation in the nominal form of the Grey Heron.

OSTEOLOGICAL NOTE

Contributed by G. S. Cowles

I have been able to examine the skeleton of *Ardea cinerea monicae* from the collections of the Paris Museum, and have compared it with nine specimens of *Ardea c. cinerea* in the osteological collection of the British Museum (Nat. Hist.).

The cervical and thoracic vertebrae of *A. c. monicae* show no marked differences from those of *A. c. cinerea* and there appears to be no special osteological features to account for the difference in stance observed by R. de Naurois. Possibly a myological study of the neck region would be of interest.

Other bones from the skeleton show no significant differences in the osteological characters between the two subspecies, with the exception of the tarsometatarsus, which is more robust and a little longer in *A. c. monicae*:—

Tarsometatarsus	*A. c. cinerea*	*A. c. monicae*
Total length	141·5 – 165·5 (152 mm)	167 mm
Lateral width midway along length	5·3 – 6·7 (6·0 mm)	7 mm
Dorsolateral width midway along length	4·6 – 5·8 (5·1 mm)	6·2 mm
Lateral width at proximal end	13·5 – 16·2 (14·6 mm)	14·7 mm
Lateral width at distal end	13·5 – 15·3 (14·4 mm)	14·7 mm

DISCUSSION

Ardea cinerea monicae was described as a well marked subspecies mainly on the basis of its colouring. It may be added that the characteristics it shows in postures and breeding habits, although still needing further study in the field and comparison with Asiatic subspecies, reinforce its distinctiveness, while the appreciably thicker tarsometatarsus indicated by Mr. Cowles's examination is also to be noted. The question to be considered in this concluding section is whether these traits can be tentatively interpreted as adaptations to a very special environment.

Conditions where this Heron lives are at one and the same time inter-tropical, arid and maritime, that is to say they differ strikingly from those which prevail on lagoons, lakes or riverbanks at more temperate latitudes or in more continental regions. Along the Mauritanian coast vast stretches of shallow water are exposed both to intense insolation and to almost continuous agitation by the trade-winds, while the islets and shores are almost completely devoid of vegetation. Consequently, the herons are unable to

find any proper shelter or concealment, are, on the contrary, exposed all day to the glare of the sun and can always be sighted from far away by predators, including human beings. These factors may well account for their wariness and posturing, as well as for their choice of isolated, bare rocky islets for nesting. It still remains surprising and unexplained that they seem to avoid the belt of *Avicennia* trees in the north of the Tidra Island. The tidal currents of the Baie d'Arguin are not negligible and the waves and winds are often strong, sometimes very strong. Physically, therefore, the herons are subject to pressures that they would not encounter if their feeding grounds were situated in lagoons and channels between reeds. This has perhaps favoured the rather more robust osteological and muscular features to which attention has been drawn.

Taken together all the peculiarities suggest that the process of adaptation has lasted for a fairly long time and cannot have taken place very recently. In that sense it is clear that *Ardea cinerea monicae* is an older form than, for example, *Platalea leucorodia balsaci* Naurois & Roux (1974). The Mauritanian Spoonbill is little differentiated morphologically and ethologically from the European *P. l. leucorodia*, and could well have been forced to leave the lakes of the interior of the Sahara by quite recent climatic changes (i.e. since the "climatic optimum" of five or six thousand years ago). On the other hand, one is led to assume that the Mauritanian Heron has been a much longer term inhabitant of a coastal zone, which once differed only in having a more densely developed mangrove belt than now.

A possible objection to any such hypothesis is that, on the one hand, it suggests that *Ardea cinerea monicae* has been restricted to the particular part of the Saharan coastal waters, where ample possibilities exist for both feeding and nesting, but, on the other hand, the climatic vicissitudes of the Pleistocene must have caused alternate northward or southward shifts of temperature zones and *ipso facto* the flora and fauna, which as a consequence could have ousted the herons several times from the limited area needed for their evolution. But this is improbable for at least two reasons. First, the regulative effect of the oceanic water mass must have lessened the amplitude of the climatic oscillations and the trade-winds, even if they were subject to some modifications in strength and direction, could not have altogether ceased to produce upwellings along the continental shelf. Secondly, since the herons had at their disposal an area of shallow water 180 km long and 20 to 40 km wide, they were free to move according to local conditions, the upwelling always furnishing sufficient food at one point or another between the Baie du Lévrier (21° 10'N) and Cape Timris (19° 23' N) and islets in the north (Pelicans Islet and others in the Baie d'Arguin) or in the south (around Tidra) alternately providing the indispensable security against predators, particularly *Canis aureus* and *Hyaena*. Hence, survival possibilities must have been fairly stable.

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The occurrence and the habitat of the Pale-bellied Mourner *Rhytipterna immunda* in Surinam

by F. Haverschmidt

Received 30th August 1975

The Pale-bellied Mourner is known from only a few and widely separated localities in tropical South America and still is very rare in collections (Lanyon & Fry 1972).

As reported earlier (Haverschmidt 1954, 1968), I found it regularly on the savannas near Zanderij, about 50 km south of Paramaribo, Surinam. In the period 1952–1973, I collected 10 specimens in that area, one in January, one in April, one in June, two in August, three in September and two in November. Moreover, I have a sight record dated 23 September 1953, in savanna on the hills south of Albina on the left bank of the Maroni River, in the east of the country, while Dr. G. F. Mees collected a male on 31st October 1972, in savanna near Powakka about 10 km south-west of my locality near Zanderij.

It therefore seems that the species may be not so rare as is generally supposed but, according to my experience in Surinam, it does have a rather restricted habitat. At Zanderij it lives at the edge and in the lower part of tall and dense bushes growing to a height of about 5–6 metres on sandy ground and interspersed with patches of open sand supporting a sparse vegetation of savanna grass (Fig. 1).

The bushes form a rather narrow strip between open savanna and tall savanna forest, the demarcation between bush and forest being very sharp. This habitat matches the "cerradão", the Brazilian term for the closed woodland between savanna and forest (Fry 1970). Birdlife is poor in these bushes, but apart from *Rhytipterna* two other species are quite charactersitic of the habitat: the most numerous is the Rufous-crowned Elaenia *Elaenia ruficeps*, while the Black Manakin *Xenopipo atronitens* is less common. I never found either of them in any other habitat in Surinam. In addition, in the undergrowth lives the White-fringed Antwren *Formicivora grisea*, while the outer fringe of the bushes adjoining the open savanna is the favoured habitat of the Red-shouldered Tanager *Tachyphonus phœnicius* which invariably nests on the ground and often at the foot of a shrub. I never succeeded in finding the nest of *Rhytipterna immunda*, which is still unknown, but two males collected on 17 September and 2 November had greatly enlarged testes as had the male collected by Dr. Mees on 31 October, so that it is likely that the breeding season in Surinam is in the long dry season.

The weight of my 10 specimens was: eight males 25–30 grams (average 28·7) and two females both 25 grams.

Figure 1

Habitat of *Rhytipterna immunda*, Zanderij, Surinam, December 1973.

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Occurrence of the Western Sandpiper *Calidris mauri* at Lake Baikal U.S.S.R.

by P. R. Colston

Received 12th September 1975

Amongst a large collection of Charadriiformes presented to the British Museum by Henry Seebohm in 1892, is a typical specimen of *Calidris mauri* (B.M. Reg. No. 1892.8.1.27) still retaining most of its summer plumage. It was collected on 6th September 1869, at Kultuk, in Irkutsk Province

(51° 45′ N, 103° 44′ E), which lies on the S.W. shore of Lake Baikal. The bird was originally identified as a Red-necked Stint *C. ruficollis*, and apparently had not been critically re-examined.

The main part of the breeding range of *C. mauri* consists of the coastal tundras of Alaska, where it nests from the delta of the Yukon River to Point Barrow and on Nunivak island. An early reference by Nelson (1887) to its occurrence on the northeast coast of Siberia is cited by Dement'ev *et al.* (1951) However it was Portenko who firmly established the first breeding records on the Chukotski Peninsula, so that this species was finally added to the avifauna of the U.S.S.R. The A.O.U. Checklist gives the wintering range of *C. mauri* as from the coast of California, Gulf of Mexico, and Atlantic coast from North Carolina, south to the Antilles, Central America, Venezuela and Peru.

Its presence at Lake Baikal in the autumn suggests that some of the Siberian birds may winter in South East Asia. I have, however, been unable to trace any other passage records in either spring or autumn or wintering records of this species in the U.S.S.R., or indeed from the coastal areas to the south of Lake Baikal in S.E. Asia. There is one interesting record of a bird of this species in breeding plumage near Hobart, Tasmania, in September 1969 (Condon 1975). The evidence to date thus strongly suggests that the small population of Western Sandpipers breeding in north-eastern Siberia winters along the coasts of the U.S.A. and South America.

I should like to thank Dr. D. W. Snow for confirming my identification of the specimen.

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On the nest and eggs of the Little Sparrowhawk *Accipiter minullus*

by J. F. R. Colebrook-Robjent and Peter Steyn

Received 6th September 1975

INTRODUCTION

Liversidge in his important paper on the Little Sparrowhawk *Acciptier minullus* (1962) in South Africa was the first to suggest that some collectors had mis-identified spotted eggs of the Little-banded Goshawk (or Shikra) *Accipiter badius* for the present species. Since then one of us (Steyn 1972) recorded only unmarked white eggs of *A. minullus* in Rhodesia.

A number of standard works of reference are inconsistent when describing the eggs of *A. minullus:*

1. "Eggs three, greenish white, either plain or blotched with grey and brown; about 35 × 26 mm, larger in the south" (Mackworth-Praed & Grant 1962).
2. "Eggs . . . probably about 27 × 18 mm, but much larger measurements are quoted" (Mackworth-Praed & Grant 1970).
3. "Eggs . . . greenish white, two or three to the clutch. Average (38) 36·5 × 29·3 mm" (McLachlan & Liversidge 1970).

4. Winterbottom (1971) virtually repeats this, but the blotched egg attributed to *A. minullus* on Plate 6 passes without comment.
5. Brown & Amadon (1968) take their description of the eggs from McLachlan & Liversidge (1970).
6. A recent publication devoted almost entirely to describing the eggs of African birds (James 1970) adds further uncertainty. Therein clutches of one to three are given, all spotted and blotched, averaging (9) 38·3 × 30·8 mm.

Our separate experiences with nesting *A. minullus* in the field are similar to Liversidge (1962) and this has led us to conduct an inquiry into the matter of egg colour and size. A questionnaire was sent to several ornithologists likely to have knowledge of *A. minullus* nests. They were asked to supply details of all nests they had found (if any) including notes on construction and lining and a full description of eggs (clutch size, whether spotted or unmarked and measurements). They were also required to give similar details concerning nests and eggs of *A. badius*, the species most often confused with *A. minullus* in the field. At the same time all museums in southern Africa were asked to supply descriptions and measurements of *A. minullus* eggs in their collections. What follows is a summary of the answers.

Observers. Out of 25 questionnaires sent we received 17 replies. Of these 14 admitted having personal field experience of breeding *A. badius*, but only seven had also found nests of *A. minullus*. In addition we were supplied with information concerning nests and eggs of *A. minullus* from two other observers who had not been sent the questionnaire. As expected, all eggs of *A. minullus* were described as white and unmarked and those of *A. badius* as more or less spotted. Significant details of nest construction will be summarized below. All records of *A. minullus* nests with eggs are given in Table 1.

Museums. Five Natural History museums in Africa claim to possess eggs of *A. minullus*, viz:—

Durban Museum: Six eggs (c/1, c/1, c/4) all blotched, ranging from 36·3 × 30·6 to 40·7 × 30 mm.

Natal Museum: One egg, white unmarked; 37·8 × 28·4 mm.

Queen Victoria Museum: Nine eggs, previously referred to (James 1970).

Transvaal Museum: Twenty-eight eggs (2/1, 4/2, 6/3), 27 of which are described as "marked" ranging in size from 34·6 × 28·6 to 39·8 × 30·7 mm. One egg is white, unmarked and measures 34·0 × 28·2 mm.

Umtali Museum: The oological collection here is part of the private collection of D. C. H. Plowes. There is one c/2, white and unmarked, measuring 35·8 × 27·1 and 35·0 × 27·2 mm.

In addition, the Western Foundation of Vertebrate Zoology has one unmarked (but nest-stained) egg of *A. minullus* collected by V. G. L. van Someren in Kenya.

One of us (J.C-R.) personally examined the nine alleged eggs of *A. minullus* in the Queen Victoria Museum, Salisbury. He was fortunate in being helped in this task by R. D. Jeffery who has a wide experience of nesting birds of prey. We found that one c/3 and one c/1 are apparently eggs of *A. rufiventris*, another c/3 is likely *A. badius*, the remaining two eggs are difficult to determine, but could be singles of *A. badius* and *Elanus caeruleus*.

In the light of the discovery of these errors we have rejected all spotted eggs attributed to *A. minullus* in museum collections, a decision supported by recent evidence in the field by several independent observers. The five

unmarked eggs previously noted have been accepted by us and are included in Table 1.

A third source is the S.A.O.S. Nest Record Card (N.R.C.) collection. We are indebted to Dr. J. M. Winterbottom for copying out all the 47 nest records referring to *A. minullus;* 18 of these are rejected as many are obvious errors for *A. badius* and others were doubtful. Fourteen are "possible", but are regrettably unusable due to lack of detail. The remaining 16 are considered authentic and the information thereon is summarized with our own.

Nests. The nests of *A. minullus* are typically placed in upper forks of main branches, often high up and less variable in choice of site than *A. badius*. Typical situations are illustrated in Benson & White (1957) and Steyn (1972). However, one of us (J.C-R.), found a nest placed in a crotch of the main trunk of a gum tree, not near the top. A variety of trees are used for breeding, according to habitat, not necessarily in the vicinity of river valleys. Plantations of exotic gums *Eucalyptus* spp. are a favourite habitat if these are sufficiently mature as records show from South Africa, Rhodesia and Zambia (Liversidge 1962; Colebrook-Robjent, unpubl. and N.R.C.). Curiously, this species is not one of the many raptors recorded utilizing gum trees by Smith (1974).

The nests themselves vary considerably and fairly stout sticks may be used in the base. A nest 7 m up in a Mfuti *Brachystegia bohmii* in Zambia was not small (J. C-R.). The deep substantial base was covered with cobwebs (as in *Melierax gabar*) and may possibly have been built on the foundation of a nest of that species. The diameter of the cup in this case was 13 cm. Steyn (1972) gives 18 cm for the width of one of his nests. Many nests, however, are much lighter affairs and such descriptions as "flimsy and almost transparent" are common (Dr. C. R. Saunders pers comm; N.R.C. and our own experience). Characteristically, the nests are lined with very fine twigs and usually with at least a few green leaves (Plate 1a). The lack of any mention of lining in several records may be attributable to the oversight or non-agility on the part of observers. This is equally true of nest descriptions of *A. badius* where more frequently than otherwise no lining is recorded. The equally characteristic chips of bark lining used by *A. badius* was pointed out long ago by that careful observer Rev. A. H. Paget-Wilkes (in Swann, 1924–36) and we can confirm that all nests of *A. badius* found by us have had these chips of bark in the lining (Plate 1b). As pointed out by Steyn (1973) this is a useful distinction between the nests of these two small accipiters.

Eggs. Nearly always two; occasionally only a single egg is incubated, whilst clutches of three are very rare, only two incidents being known to us (see Table 1). Eggs are invariably unmarked white, sometimes tinged greenish when fresh and as incubation progresses, becoming nest-stained. Authentic spotted eggs of *A. minullus* are unknown to us and we have rejected all such records. Should an observer find a supposed nest of *A. minullus* containing spotted eggs we urge that the fullest possible proof be obtained before the record is published. The average size of 43 authentic eggs is found to be $34 \cdot 8 \times 28 \cdot 1$ mm, max: $37 \cdot 8 \times 28 \cdot 4$ and $37 \cdot 3 \times 31 \cdot 6$; min: $32 \cdot 6 \times 27 \cdot 0$ and $35 \cdot 0 \times 26 \cdot 9$ mm. This is significantly smaller than the 38 eggs averaging $36 \cdot 5 \times 29 \cdot 3$ mm quoted by McLachlan & Liversidge, which measurements appear to have been taken from incorrectly identified material in museum collections. Indeed, these erroneous figures are very close to the average of 59 eggs of *A. badius* ($36 \cdot 8 \times 29 \cdot 4$) from the same source. We have measurements of a further 94 eggs of *A. badius* (1/4, 16/3,

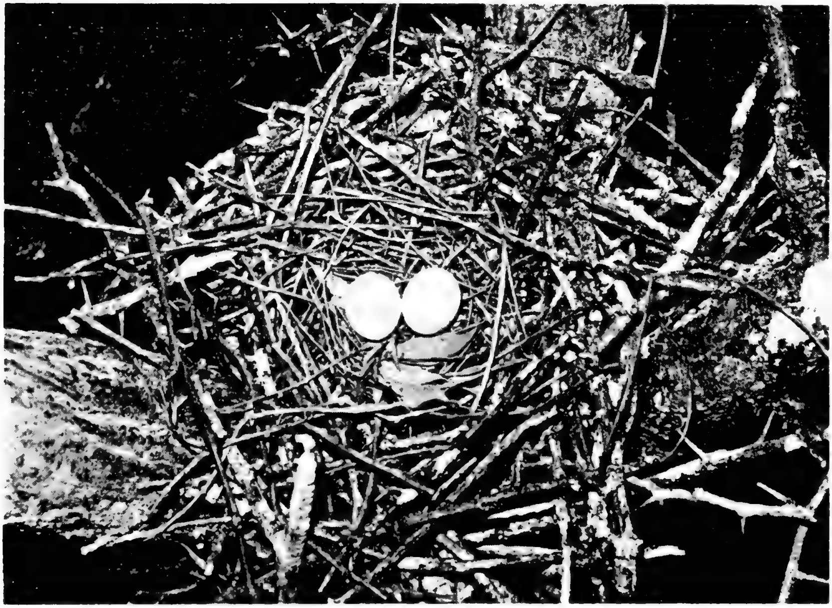

PLATE 1(a) Nest of *Accipiter minullus* showing white eggs, the fine sticks of the central depression and a few green leaves as lining.

Photos: Peter Steyn

PLATE 1(b) Nest of *Accipiter badius* showing marked eggs and bark lining.

20/2, 2/1) from South Africa, Rhodesia, Zambia and Malawi which average 37·0 × 29·6 mm.

TABLE 1

White, unmarked eggs of *Accipiter minullus*

36.0 × 28.2	c/2	16.11.69	Zambia	J. C-R.
35.3 × 27.9				
34.4 × 27.7	1 of c/2	18.9.70	Zambia	J. C-R.
35.0 × 27.2	c/2	5.11.61	Rhodesia	P. S.
34.8 × 28.0				
35.2 × 29.7	c/2	3.10.62	Rhodesia	P. S.
35.0 × 29.5				
33.5 × 28.0	c/2	12.10.61	Rhodesia	W. W. Howells
33.1 × 28.0				
34.5 × 27.0	c/2	27.11.66	Rhodesia	W. W. Howells
34.5 × 27.0				
33.5 × 28.0	c/2	1.10.—	Rhodesia	R. D. Jeffery
33.3 × 27.0				
35.8 × 27.1	c/2	21.10.52	Rhodesia	D. C. H. Plowes
35.0 × 27.2				
37.0 × 28.0	c/2	15.10.50	Rhodesia	C. R. Saunders
35.0 × 27.0				
36.5 × 28.6	c/2	25.11.60	Rhodesia	C. R. Saunders
35.7 × 28.6				
34.0 × 27.7	c/2	8.10.57	Rhodesia	A. W. Wragg
33.0 × 28.0				
37.8 × 28.4	c/1	—.—.96	South Africa	F. W. FitzSimons
34.0 × 28.2	c/1	29.11.34	South Africa	F. Streeter
36.5 × 27.0	c/2	10.11.36	South Africa	H. Pohl
35.5 × 27.0				
33.9 × 29.0	c/2	17.11.39	South Africa	H. Pohl
33.0 × 27.9				
36.6 × 28.5	c/1	28.9.40	South Africa	H. Pohl
35.0 × 26.9	c/2	17.10.40	South Africa	H. Pohl
32.6 × 27.0				
35.8 × 29.9	c/3	7.10.46	South Africa	H. Pohl
34.3 × 28.7				
34.2 × 28.7				
34.2 × 29.5	c/3	2.11.46	South Africa	H. Pohl
34.0 × 27.8				
33.2 × 28.3				
35.6 × 27.8	c/2	15.9.69	South Africa	H. Pohl
33.8 × 28.1				
34.6 × 28.3	c/2	5.11.55	South Africa	R. Liversidge
34.0 × 28.6				
36.0 × 28.2	c/2	3.11.56	South Africa	R. Liversidge
35.6 × 29.4				
37.3 × 31.6	c/1	—.10.19	Kenya	V. G. L. van Someren

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The race of the African Finfoot *Podica senegalensis* (Vieillot) in Ethiopia

by C. Erard and C. W. Benson

Received 25th October 1975

The occurrence of *Podica senegalensis* in Ethiopia was recorded for the first time, near Bahar Dar, on the south side of Lake Tana, as recently as 1966 (Benson & Schüz 1967). This, and two further sight records, from the Rift Valley and the south-west of the territory, were duly covered by Urban & Brown (1971), who considered it as probably resident, as it may reasonably be assumed to be throughout its range.

Further records from near Bahar Dar are given by Sassoon (1974) and by Erard (1974). The latter collected the only specimen so far known from Ethiopia, now in the Muséum National d'Histoire Naturelle, Paris. Due to a paucity of comparative material, he was unable to comment on its racial status. It was therefore lent to Benson for comparison with the material in the British Museum (Natural History), Tring, in which there are 55 specimens, representative of all the races recognised by White (1965).

The Ethiopian specimen was sexed as a male, and has wing-length 209 mm; it weighed 550 g. Although its testes were somewhat enlarged (10 × 4 mm), it is not fully adult, still retaining some buff on the chest, with only a little bottle-green on the mantle, and white spotting on the upperparts as a whole still only sparse (compare with the description in Bannerman 1931). Also, although the feet were already "orange", the bill was "noir", instead of mainly red, with only the culmen sepia, as in adults. It has a well developed white lateral neck stripe, and indeed in colour it cannot be distinguished from *P. s. senegalensis* or *P. s. petersii* Hartlaub. The only difference between these forms is in size. Thus White gives the wing-length of the male of *petersii* as 220–252 as against 186–215 mm in the nominate form, likewise of

the female 184–215 as against 163–183 mm. The sexing of the Ethiopian specimen is unquestionable, and was determined by Erard personally. Accordingly it can be placed with *P. s. senegalensis*. In both this form and *petersii* the adult male has the throat grey, and the fact that the Ethiopian specimen has the throat white can be attributed to its immaturity.

No material was available in Tring from north-eastern Zaire or Uganda, although according to Chapin (1954) and White (1965) the small *P. s. senegalensis* ranges as far eastward as this region. The barrier to its extension into western Ethiopia would be relatively slight, whereas that across the subdesert steppe and even desert of northern Kenya (Keay 1959), with a complete lack of suitable habitat (perennial rivers with wooded banks), would be much more formidable. Certainly specimens from the highlands of Kenya, downwards to the mouth of the Tana River, and north-eastern Tanzania (Amani) are larger than any of *P. s. senegalensis*, according to wing-lengths in mm from material in Tring and including also two Kenya males of *P. s. somereni* Chapin measured by Chapin (1954):—

♂♂ 220, 225, 231, 232, 235
♀♀ 192, 192

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The Status of the Least Grebe in Argentina

by Robert W. Storer

Received 29th August 1975

According to most, if not all, standard works, the range of the Least Grebe (*Tachybaptus dominicus*) is said to extend south to Patagonia (e.g. Hellmayr & Conover, 1948: 23; Meyer de Schauensee, 1970: 10). This is in marked contrast to the experience of recent observers, including Alexander Wetmore, Jorge R. Navas, Claes C. Olrog, Milton W. Weller, Philip S. Humphrey, Frank B. Gill, and myself, who have failed to find this species even as far south as Buenos Aires Province. Furthermore, a search of the collections of the major museums in North America, the British Museum (Natural History), the Museo Argentino de Ciencias Naturales, the Museo de La Plata and the Instituto Miguel Lillo has failed to produce a single specimen from as far south as Buenos Aires. This discrepancy prompted a critical assessment of the records from central and southern Argentina.

As far as I can determine, the occurrence of the Least Grebe as far south as Buenos Aires Province is not substantiated. The reports in the literature apparently resulted from confusion of the Least Grebe with Rolland's Grebe (*Rollandia rolland chilensis*). In winter plumage, the two are quite similar in size and general colouration, but adults of *chilensis* are readily identifiable in any plumage by the red iris and the black (or brown) and white plumes on

the side of the head. In addition, specimens can be identified by the characters of the primaries and tarsal scutellation described by Wetmore (1926: 43).

The Least Grebe was first reported from Patagonia by Durnford, who visited the Chubut Valley from 31 October to 29 November, 1876, and from 5 September 1877 to 20 April 1878. In the report of his first visit, (1877a: 45), he lists two species of grebe: *Podiceps calipareus* [=*occipitalis*] and "*Podiceps rollandi*". He collected two of the former, which I have examined in the British Museum, and he reported the latter to be "common in almost every pool and ditch in the valley". In the report of his second visit (1878), he states (p. 389) that he "thought it advisable to go through the whole list of birds again", and marked with an asterisk those species mentioned in the earlier account. In the second list (p. 405) are three grebes: *Aechmophorus* [=*Podiceps*] *major*, *Podiceps calipareus* (with an asterisk), and *Tachybaptes* (sic) *dominicus* (without an asterisk). Of the last, he merely says "Resident, and common in lagoons in the valleys of the Chupat, the Sengelen, and the Sengel". It is possible that he omitted to mention *rolland* in the second paper, but I think it is almost certain that either he changed his mind about the identity of the common small grebe of the region or that the editors (Salvin & Sclater) changed the name of the species in the manuscript. (Sclater, at that time an authority on South American birds, appears to have confused the two species.) There is little doubt that Durnford referred to *rolland chilensis* as "*dominicus*" in his two papers on the birds of the Buenos Aires region (1876: 1877b). On page 203 of the latter, he says of "*Tachybaptes dominicus* . . . Resident and common in lagoons and 'arroyos'. The female is not quite so brightly coloured as the male, and the elongated feathers on the head are shorter in that sex". The reference to the "elongated feathers" can only apply to *rolland* as must the idea of the male being more brightly coloured. It is significant that *rolland* is not mentioned in either paper, although a skin of *rolland* taken by Durnford at Chirilcay, Buenos Aires Province, is correctly listed as "*Podiceps americanus*", a synonym of *chilensis*, by Ogilvie-Grant (in Sharpe & Ogilvie-Grant, 1898: 526), who listed no specimens of *dominicus* from Argentina. According to Dr. D. W. Snow (*in litt.*), this bird, which I have also examined, is still in the British Museum. The data, in what is presumably Durnford's hand, include the identification "*Podiceps dominicus*". The incorrect identification on the label has not been changed. Another skin of *rolland* in breeding plumage, collected in June, 1876, at Lujan Bridge, Buenos Aires Province, was also misidentified on the label as *dominicus*. Like Durnford's bird, this was correctly identified by Ogilvie-Grant (*loc. cit.*).

The two other original reports of *dominicus* from Chubut are also unsatisfactory. In his report on a collection made by Gerling in western Chubut, Lynch Arribálzaga (1902: 159) remarked, under *Podiceps dominicus*, that Gerling obtained eggs of a grebe from Lago General Paz and that probably they were of this species, because Burmeister observed it in 1887 on a nearby lake in the valley of Carrenleufú. Burmeister evidently did not collect this species in Chubut and, as will be shown later, confused it with *rolland*. These three unsatisfactory records appear to be the basis for all subsequent reports of the Least Grebe in Patagonia.

Two reports of the Least Grebe from Buenos Aires Province are clearly in error. Withington (1888: 473) listed a specimen from Lomas de Zamora identified by Sclater as *dominicus* but did not mention *rolland*. I have examined what is undoubtedly this specimen, a male *rolland* in winter plumage (Brit.

Mus. No. 92.6.29.48) collected by Withington at Lomas de Zamora on 17 April 1887. This bird also was correctly listed by Ogilvie-Grant (*loc. cit.*).

In a list of specimens taken at Estancia Espartillar, Buenos Aires Province, by A. H. Holland and examined by P. L. Sclater (Holland, 1890: 425) *dominicus* is included but *rolland* is not. In a subsequent report on the collection, Holland (1892: 214) lists *rolland* as "fairly common throughout the year" and *dominicus* as "common throughout the year", but no specimens are listed. Holland states that the specimens on which this paper was based were "in nearly every case . . . submitted to Mr. Sclater for identification". Two specimens which I have examined at the British Museum (Nos. 97.11.14.204 & 205), collected by Holland at Est. Espartillar in 1888 and 1890, are a male and female *rolland chilensis* in winter plumage. Dr. Snow has kindly checked these speciments and reports (*in litt.*) that No. 204 was earlier identified as *rolland* and No. 205 as *dominicus*.

White (1882: 629) reported collecting a female "*dominicus*" at Punta Lara, Buenos Aires Province, on 23 February 1881, and also reported a specimen of *rolland* from Alto Parana, Misiones. I have not been able to locate these specimens and consider the record of *dominicus* suspect, at least until the specimen can be found and its identity determined. Similarly, the pair collected on 13 December 1898, by Gibson near Cape San Antonio, Buenos Aires Province, and reported by him (1920: 86) to be in the Buenos Aires Museum are not there or were misidentified, for Navas (*in litt.*) says that there are no specimens of *dominicus* from Buenos Aires Province in that collection or in that of the Museo de La Plata. Gibson also gave a sight record for a pair of *dominicus* with young at the same place on 25 February, 1900. As Gibson was a long-time resident of the area and knew the abundant *rolland* well, it is possible that these records are valid; still, they were made at a time when the two species were generally confused by ornithologists.

Finally, there is the specimen taken in May, 1873, at Isla de Baradero, Buenos Aires Province, on which Enrique Lynch Arribálzaga based his description of *Podiceps speciosus*. I have been unable to locate this specimen and know of no one who has seen it. The original description was copied and republished by Wetmore (1926: 44), who referred it to *dominicus*, basing his decision on a note published in *El Naturalista Argentino*, Tomo I, Entr. 2a, February 1, 1878, p. 63, presumably by its editors, Felix Lynch Arribálzaga and Eduardo Ladislao Holmberg. According to this note, the describer declared that he had made an error and that the specimen on which his description was based was an adult male of *dominicus* in breeding plumage. The note concludes with the statement that Dr. Burmeister agreed that *Podiceps speciosus* did not differ from *P. dominicus*. (I am indebted to Dr. Wetmore for sending me a copy of this note.) On comparing the original description of *speciosus* with skins of *dominicus* and *chilensis*, I was surprised to find that it could only apply to an adult of the latter in winter plumage. Some of the critical points which apply to *chilensis* and not to *dominicus* are the small crest, the chestnut-bordered feathers on the crown, back and wing coverts, the white ear coverts streaked with dark, the white sides of the head, the wing pattern, the light cinnamon underparts with a silvery reflection, and the carmine iris. Thus, until a valid specimen record can be found, the occurrence of the Least Grebe in Buenos Aires Province should be considered hypothetical.

Among the more than 700 specimens of Least Grebe which I have examined in collections in the United States and Canada, I have found but 12

from Argentina. In addition, Jorge R. Navas has sent me data for seven specimens in the Museo Argentino de Ciencias Naturales and two in the Museo de La Plata, and Claes C. Olrog for 10 specimens in the Instituto Miguel Lillo. The 31 specimens are from Jujuy (2), Salta (14), Formosa (8), Misiones (2), Tucumán (2), Santiago del Estero (2) and San Luis (1). Olrog (*in litt.*) reports seeing Least Grebes in Salta, Jujuy, Tucumán, Santiago del Estero, Chaco, and northern Santa Fe but never "south of subtropical north-central Argentina". Thus, with the exception of one specimen in the Museo de La Plata from Concarán, San Luis, all specimen records, and Olrog's observations, are from north of Latitude 30° S, presumably the southern border of the species' normal range. According to Olrog, Least Grebes are migratory in Argentina, hence, from time to time they may be expected to appear further south.

Because of the change in allocation of the name *Podiceps speciosus* Lynch Arribálzaga, it becomes a synonym of *Podiceps chilensis* Lesson. The oldest valid name for the South American subspecies of the Least Grebe appears to be *Colymbus dominicus brachyrhynchus* Chapman (*Bull. Amer. Mus. Nat. Hist.* 12: 255, Dec. 23, 1899—type locality, Chapada, Matto Grosso, Brazil), and that race should be called *Tachybaptus dominicus brachyrhynchus* (Chapman). My reasons for placing this species in the genus *Tachybaptus* with the Old World dabchicks will be published elsewhere.

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The taxonomic relationship of *Buteo rufofuscus* and *B. augur*

by R. K. Brooke

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Sclater (1918) placed *Falco* (*Buteo*) *augur* Rüppell, 1836, as a race of *B. rufofuscus* (Forster), 1798, without discussion, while proposing a new form which he called *B. jakal archeri*, *B. jakal* (Daudin), 1800, being a junior synonym of *B. rufofuscus*. Sclater's unargued decision has been followed since without, as far as I can ascertain, any discussion other than by Swann (1930) who rejected Sclater's view. Since Swann's work is not readily available it seems desirable to quote his remarks on p. 386—

> "I am unable to agree with W. Sclater that this species ([*augur*]) is a form of *Buteo rufofuscus*. Although there are two phases in the present bird, white-bellied and black-bellied, neither has the least resemblance to the normal adult plumage of *B. rufofuscus* and it is only melanistic examples of the latter bird that can resemble the melanistic phase of *B. augur*, but melanism has nothing to do with specific identity."

I agree with Swann's remarks as far as they go.

TABLE

Measurements in millimetres and weights in grams of *Buteo rufofuscus* and *B. augur* by sex and age classes

	wing length	*culmen from cere*	*hind claw*	*weight*
A. *B. rufofuscus*				
ad. ♂♂	400–455	24–31	24–31	
	av. (15) 421, s.d. 15·4	av. (13) 26·7, s.d. 2·0	av. (15) 27·4, s.d. 1·9	
ad. ♀♀	420–455	25–30	25–32	
	av. (13) 442, s.d. 12·5	av. (13) 28·1, s.d. 1·4	av. (13) 29·9, s.d. 1·8	
ad. overall	390–455	24–31	24–32	
	av. (39) 429, s.d. 18·0	av. (37) 27·2, s.d. 1·8	av. (37) 28·4, s.d. 2·1	
imm. overall	395–450	24–28	25–30	
	av. (13) 421, s.d. 19·0	av. (10) 26·1, s.d. 1·4	av. (12) 27·4, s.d. 1·9	
juv. overall	400–450	24–29	26–31	
	av. (9) 432, s.d. 17·3	av. (9) 26·7, s.d. 1·7	av. (10) 28·8, s.d. 1·4	
Brown and Amadon (1968) give—				
♂♂	393–410 (401)			
♀♀	423–444 (432)			1530
Swann (1930) gives—				
	♂♂ 400–430 ♀ 455			
B. *B. augur augur*				
ad. ♂♂	395–450	25–28	25–30	710
	av. (15) 420, s.d. 15·8	av. (15) 26·3, s.d. 1·2	av. (15) 26·5, s.d. 1·6	
ad. ♀♀	430–450	28–30	28–30	1190
	av. (7) 439, s.d. 10·7	av. (6) 29·2, s.d. 0·8	av. (7) 28·9, s.d. 1·1.	
ad. overall	395–455	25–30	25–31	
	av. (25) 428, s.d. 16·8	av. (24) 27·2, s.d. 1·7	av. (25) 27·5, s.d. 1·8.	
imm. overall	395–440	24–28	24–31	
	av. (5) 414, s.d. 23·8	av. (5) 26·0, s.d. 1·6	av. (5) 27·0, s.d. 2·9	
juv. ♀♀	420, 425	26, 27	27, 27	
Brown & Amadon (1968) give—				
♂♂	384–405			880–1160
♀♀	435–466			1097–1303
Swann (1930) gives—				
	♂♂ 400–428 ♀♀ 435–475			
Verheyen (1953) gives—				1246
♂	406			
♀♀	425, 450			

B. rufofuscus and *augur* are essentially the same size (see Table) and allopatric. This does not by itself suffice to make them conspecific or even closely related phylogenetically. It strongly indicates that their autecologies are very similar and that this prevents their coexistence on the same ground. An examination of the pictures in Brown & Amadon (1968) which show virtually all members of the worldwide complex of *Buteo* forms does not

reveal any species whose plumage pattern resembles that of adult *B. rufofuscus* with its brick red breast between a dark grey-brown throat and abdomen whereas a number of forms, mostly in the new world resemble more or less closely *B. augur* with its dark throat and uniform pale breast and abdomen. The juvenal plumage of *B. rufofuscus* is similar to that of most juvenals in the genus which merely shows that the *Falco rufofuscus* of Forster has been correctly transferred to *Buteo* Lacépède, 1799. Their calls are remarkably dissimilar (e.g. Brown & Amadon 1968). Their flight silhouettes are not identical: *augur* has a relatively straight trailing edge to the wing whereas *rufofuscus* has the innermost secondaries and the tertials shorter than the central secondaries so that the trailing edge of the wing comes into the body at an acute angle. A similar but more obvious silhouette is found in *Aquila verreauxii* Lesson which shares with *B. rufofuscus*, though to a more marked degree, the habit of hunting by slipping around the sharp corners of crags to surprise its prey. There is no record of a hybrid or intergrade between *augur* and *rufofuscus* where their ranges abut in the Transvaal and South West Africa.

It seems to me that the foregoing points are better explained by regarding *B. rufofuscus* as a monotypic species of uncertain position within its genus.

It appears that *B. j. archeri* Sclater, 1918, which I have not seen, is a redder version of *B. augur* (Rüppell), 1836, (see Brown & Amadon 1968), and correctly placed as a race thereof in the combination *Buteo augur archeri*.

In east Africa but not in Rhodesia a melanistic morph is found in *B. augur*. Brown & Amadon (1968) point out that in forested areas this morph provides some 50% of the individuals present. Following a suggestion to me by P. A. Clancey, I would explain this situation by postulating three races of *B. augur* during the last glaciation: white bellied birds "*augur*" in southeast Africa, black bellied birds in the forested areas of east Africa, red bellied birds "*archeri*" in Somalia. After the end of the last glaciation the increasing warmth and aridity of the climate allowed white bellied birds to move into the range of the black bellied ones and since the latter had not had time to achieve reproductive isolation a mixed population appeared with the white bellied birds generally predominant in numbers and particularly so in drier areas of east Africa. I believe that many morphs with a geographical locus within the overall range of their species are to be explained as subspecies in process of extinction, a process which theoretically should be common, cf. the discussion of geographic polymorphism in North American birds by Mayr & Short (1970, p. 89).

Brown & Amadon (1968) give the impression that male *B. a. augur* are very short winged with a maximum measurement of 405 mm. If this is not a misprint for 450 mm, I would point out that east African males are not shorter winged than Rhodesian ones. The Durban Museum has three adult males from Kenya sexed personally by J. G. Williams and their wing lengths are 420, 430 and 445 mm.

The greater male standard deviations given in the Table show that there is a tendency for female *B. rufofuscus* to be sexed as male and a greater tendency for this to happen in *B. augur*. Friedmann (1930) in discussing *Terathopius ecaudatus* (Daudin) remarks that African skinners often sex female raptors as males since they often have two apparently functional ovaries which are then confused with the two testes. This situation means that the sexual dimorphism in the characters measured is, in fact, greater than the figures suggest. However, I do not believe that measurement of these characters permits the sexing of specimens in the absence of other data and feel it would be unwise

at this stage to reclassify all alleged males above a certain size as females. Although the panel is a small one, there is no suggestion that juvenals have not completed the growth of their wings, culmens and hind claws about the time they leave the nest. Thus juvenal specimens may properly be included in overall figures when desired.

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Okinawa bird notes

by Murray D. Bruce

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Short (1973a) recorded his observations from a visit to Okinawa, in February 1972, during his studies there of the Okinawa Woodpecker *Sapheopipo noguchii* (1973b). The present paper supplements information contained therein and is based on my visits to Okinawa from 27 March to 1 April and 7 to 10 April 1975; the intervening period was spent on Amami Oshima (Bruce 1975). To the general references covering Okinawa given by Short (1973a, b) may be added two of interest, Ono (1953) and Arakaki (1975). I recorded 51 species, 21 of them observed by Short (on eight of which some additional notes are included below, the remaining 13 being listed at the end of the paper). Six species listed are not recorded for the island by the Ornithological Society of Japan (OSJ) (1974); four of these were previously known from Okinawa (Arakaki *op. cit.;* in prep.; pers. comm.); the other two represent a new record, with one earlier, doubtful sighting by Mr. H. Arakaki (*Muscicapa sibirica*), and an apparently established but unrecorded feral colony of *Trichoglossus haematodus* around Naha. In comparison with Amami Oshima, there is far less forest remaining on Okinawa and most of it is found in the north of the island (cf. Okinawa Pref. Govt. 1974).

SYSTEMATIC LIST

Bubulcus ibis: one, Hentona; two, Okuma, on northwest coast; rice paddies.

Egretta alba: 35+, Manko, south of Naha; estuarine area.

Egretta intermedia: one, Manko; six, Okuma.

Egretta garzetta: 75+, Manko; one, Okuma; small numbers along west coast.

Egretta eulophotes: one, Okuma, associating with *E. intermedia* and *E. garzetta*. Not listed for Okinawa by OSJ (1974: 32), but possibly recorded at least once previously (H. Arakaki pers. comm.). I separated this bird from *E. garzetta* by the yellow of the bill, especially of the lower mandible, and the shorter, darker legs; but with only a hint of the characteristic lanceolate crest plumes. However, a closer approach to the bird, in good light, although the sky was overcast, confirmed the last-mentioned character. The OSJ listed three recent sight records of this rare species for Japan, where it is considered a straggler. Its specialized ecology (Murton 1972) suggests that the individual identified at Okuma may have been attracted by the presence of other egrets. The area, near the coast, featured open fields, interspersed with rice paddies.

Egretta sacra: white phase: one, Senaga, southwest coast; one, south of Nago, central-west coast; dark phase: one, Hentona; one near Nago.

Platalea minor: one, Senaga; coastal marsh. Not listed for Okinawa by OSJ (1974: 37), but first recorded by Arakaki in 1973 (1975: 90, 119).

Anas platyrhynchos: six, Manko.

Anas peocilorhyncha: ten, Manko.

Anas crecca: four, Manko.

Anas strepera: one, Manko. Not listed for Okinawa by OSJ (1974: 51) and apparently recorded for the first time in 1975 (H. Arakaki pers. comm.).

Anas acuta: six, Manko. Not listed for Okinawa by OSJ (1974: 52), but previously recorded (Arakaki 1975: 57, 119).

Falco tinnunculus: one near Hentona, flying over a field. Listed only as a sight record for Okinawa by OSJ (1974: 79) and illustrated in Arakaki (1975: 50).

Pluvialis dominica: one, Senaga; three south of Hentona.

Numenius madagascariensis: two, Nago Bay.

Limosa limosa: six, Senaga. In the Ryu Kyus it is only known from Okinawa (sight records) and Ishigaki (OSJ 1974: 121).

Actitis hypoleucos: five, Nago Bay; two, Hentona; one, Naha.

Tringa nebularia: 20+, Senaga.

Tringa ochropus: one, Chinen, southeast coast.

Tringa glareola: 37, Okuma.

Gallinago megala: 8+, Okuma.

Sterna albifrons: 12, Senaga.

Columba livia: fairly common around Naha.

Treron sieboldii: four, Yonaha Mountain; forest canopy. Not listed for the Ryu Kyu Islands by OSJ (1974: 162), but recorded from Okinawa by Short (1973a) and Arakaki (1975: 28, 122); also from Amami Oshima (Bruce 1975).

Treron formosae: small numbers, Yonaha Mountain. Two observed facing each other in a tree on separate branches about one metre apart. Both birds moved their downward pointing tails slowly up and down through an arc of about 40°. The first bird (male?) bowed forward, holding the head in a lowered, almost horizontal, position during the tail-wagging behaviour. The second bird suddenly stopped the tail movements while the first bird continued, retaining the head in a bowing posture. After a further 15 seconds the first bird also stopped. The two birds then remained motionless and quiet for a few minutes before flying to another tree. During the display the wings

were held against the body, no movement of the bill was noted and no calls heard. The displays of *Treron* species are very little known, but the vertical tail-wagging movements apparently replace the wing twitching behaviour of typical pigeons and are probably characteristic of the group (Goodwin 1970).

Trichoglossus haematodus: a small feral population of this lorikeet is apparently established in the Naha area. Single birds seen and heard twice in Naha and a flock of about ten flew overhead near Senaga. Not mentioned in OSJ (1974). The origin of the birds and date of introduction are undetermined (H. Arakaki pers. comm.); probably escaped captive birds.

Sapheopipo noguchii: two or three seen and heard in the Yonaha Mountain area. I visited one of the areas covered by Short (1973b) during his woodpecker studies, where I heard calls and drumming and briefly observed one bird. Mr. Arakaki pointed out two recent foraging sites, which were photographed; both well hacked rotting stumps. In discussing the conservation of *Sapheopipo*, Short predicted that the reversion of Okinawa to Japan (May 1972) might have adverse effects on the population through increased habitat destruction. In the three year period that has elapsed since then, I can, however, report that the situation has improved in the Yonaha area. Woodcutting activities have virtually ceased, some of the forested areas adjacent to the preserve are to be maintained for the conservation of this endangered woodpecker and its numbers in the Yonaha area may have slightly increased with the decreasing amount of human disturbance of the habitat (H. Arakaki & R. Gakiya pers. comm.). Short estimated the total population as from 20 to as many as 60 pairs. Unfortunately, feral pigs were found to be seriously damaging potential ground foraging sites.

Dendrocopos kizuki: one, possibly two, Yonaha Mountain. The one briefly observed was in a forested ravine at about mid-canopy level. It was part of a small mixed foraging flock, which also included *Zosterops japonica* (6+), *Parus major* (3+) and *Pericrocotus divaricatus* (2). Such flocking behaviour is apparently typical of this species on Okinawa during its foraging activities (H. Arakaki pers. comm.). Yamashina (1961: 131) noted its mixing with tits (*Parus* spp.) in the non-breeding season.

Hirundo rustica: small numbers from Senaga to near Hentona.

Hirundo tahitica: two each at Naha, near Nago and Hentona. Short (1973a) recorded this species as common, but noted no *H. rustica* at that time. Short also stated that this species does not occur in Taiwan. However, it has been recorded there (Severinghaus, *et al.* 1970; pers. obs.).

Motacilla cinerea: several, along western coast.

Pericrocotus divaricatus: 6+, Yonaha Mountain. In outer branches of trees; often calling, both perched and in flight.

Hypsipetes amaurotis: Short (1973a) noted this species as common in the dense vegetation of woods, but it is also quite common in towns and elsewhere.

Erithacus komadori: common, Yonaha Mountain. Variations of the song types transcribed by Short (1973a) were noted as—"*see-ert, see-ert, see-see-see*"; "*peet, peet, tsee, teeoo-teeoo-teeoo*"; "*tseee, tseee, tseee*". The first two having a thin, warbled quality and the third being very high pitched.

Phoenicurus auroreus: one heard, Yonaha Mountain, where also listed by Short (1973a) and more recently identified by Arakaki. Call noted as a series of high-pitched notes, almost metallic in tone, with the last two notes shorter and closer together, "*veet . . . veet . . . veet . . . veet . . . tse-er . . . tse-er*".

Cettia diphone: common in wooded areas. Short (1973a) described only one "simple song" for this bird. Two heard by me on Yonaha Mountain were transcribed as follows: "*wit-see tik, chip-chip-chip*", clear, warbled notes repeated, sometimes with slight variations, for nearly 45 seconds; "*wit-chew, wit-chew, chi-chi-chi, tsip tsip tsip*", softer in tone than the preceding and usually only heard once or twice in succession.

Musicapa sibirica: one, Yonaha Mountain, in the forest under-storey of a ravine near a small creek. Not listed for Okinawa by OSJ (1974: 275), but at least one previous, though questionable, sighting (H. Arakaki pers. comm.). I was previously familiar with *M. latirostris* and *M. griseisticta* from the Philippines, the two species with which *M. sibirica* may be confused in the field. I identified it by the dark blackish upperparts and the faint streaking on the breast, clearly observed when the bird briefly hopped onto a well lit portion of a branch; *M. latirostris* is a lighter brownish above and *M. griseisticta* has more prominent streaking below (cf. Yamashina 1961: 94). In the Ryu Kyu Islands all three species are known by only a few records. On Okinawa, *M. latirostris*, though not listed there by OSJ (1974: 277), has been recorded occasionally (H. Arakaki pers. comm.).

Corvus macrorhynchos: Short (1973a) only recorded a few at Yonaha Mountain, but I noted it as fairly common and widespread.

ADDITIONAL SPECIES RECORDED

Ardea cinerea, Gallinula chloropus, Pluvialis squatarola, Columba janthina, Streptopelia orientalis, Otus bakkamoena, Monticola solitarius, Turdus pallidus, Cisticola juncidis, Parus varius, P. major, Zosterops japonica, Passer montanus.

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Notes on birds of Amami Oshima

by Murray D. Bruce

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I visited Amami Oshima (718·44 km^2), the largest of the northern Ryu Kyu Islands of Japan, during 1 to 7 April 1975, principally to study the Amami Jay *Garrulus lidthi*, endemic to the area (Bruce in prep.). Since Hachisuka & Udagawa's report in 1953, information on the avifauna has been very limited and I have therefore summarised my notes of the species observed. I recorded 36 species, including five not listed by the Ornithological Society of Japan (OSJ) (1974).

Amami Oshima, situated about 380 km south of Kyushu, southern Japan, is still fairly well forested (84% as of 21 March 1971, Kagoshima Pref. Govt., 1971: 175); the dominant forest types being pines and "*shii*" (particularly species of *Castanopsis*, *Pasania* (*Lithocarpus*) and *Quercus;* cf. Hatusima & Amano 1967). The island is quite hilly, with the higher areas (up to 695 metres) in the south, and the airport located on the northeastern peninsula. I travelled from the main town of Naze, in the north-central part of the island, south to Asato and along the southern coastal area through Sumiyo to Shinokawa, Yui, Kunetsu, Koniya and Seisui in the southeast. I returned along the northern side of the island, stopping near Yuwan in the southwest and Kinsakubaru Reserve, near Naze.

SYSTEMATIC LIST

Egretta sacra: one, Naze; one, Kunetsu (both dark phase).

Nycticorax nycticorax: one flushed from a small stream at dawn near Seisui, others heard.

Accipiter gentilis: three in tree tops of forest edge along roadside near Kunetsu. Two were together and the other was further along. Not listed for Amami, but recorded from Ishigaki by OSJ (1974: 66). Also recorded from Okinawa and Zamami (H. Arakaki pers. comm.).

Butastur indicus: one or two, Seisui; one, Asato. The bird at Seisui was observed to swoop at an Amami Jay (Bruce in prep.).

Circus cyaneus: one near Naze; two near Yuwan.

Circus aeruginosus: one perched on a pole at Shinokawa, and later observed flying low over an open field. Not listed for Amami, but recorded from the southern Ryu Kyus (Miyako south) by OSJ (1974: 75); also recorded from Okinawa (H. Arakaki pers comm.). Easily separated from *C. cyaneus* in flight by the absence of white on the rump (cf. Yamashina 1961: 140). Both species also occur together in the Ryu Kyus on Ishigaki and Iriomote (OSJ 1974: 74–75); also Okinawa (H. Arakaki pers. comm.).

Falco peregrinus: one, Seisui; one, Asato.

Rallina eurizonoides: one heard at Seisui; call identified later by Mr. H. Arakaki. I transcribed the call as a thin, nasal '*ku-uk*, *ku-uk*, *ku-uk* . . .". Ali & Ripley (1969: 156) recorded various calls, with a "*kek-kek*, *kek-kek*, . . ." type seeming most similar to the call I noted, but not repeated for as long. As it was just after dawn, the bird was presumably terminating its calling from the previous night. The locality was in overgrown fields near a small creek. Not recorded for Amami but only the southern Yaeyama group by OSJ (1974: 91). Also recorded from Okinawa (Short 1973) and the Daito Islands (H. Arakaki pers. comm.). There has been some confusion regarding the orthography of the specific appellation of this rail. The form "*eurizonoides*"

follows the original description by Lafresnaye (1845), as used by OSJ (*loc. cit.*). The use of the incorrect form, "*euryzonoides*", undoubtedly originated from Sharpe (1894: 78).

Limosa lapponica: one, Yui, feeding on a muddy area near the road. I flushed it to be sure; the barred upper tail was distinctive. Not listed for Amami, but recorded from Okinawa, Miyako and Ishigaki, with two subspecies noted for the latter island (*baueri* and *menzbieri*), by OSJ (1974: 121).

Actitis hypoleucos: one, Naze; one, Kunetsu; two, Asato. The Asato birds were feeding from rocks in a small river, where one was seen to regurgitate an item it had swallowed.

Columba janthina: one, near Naze. It flew over a road between two forested areas on a ridge east of the town.

Columba livia: common in Naze; also small numbers in other towns and villages.

Streptopelia orientalis: fairly common in the lowlands.

Treron sieboldii: two birds of this species were flushed in thick forests at Seisui. They were generally pale greenish in coloration, revealing in flight the yellowish of the upper breast and purplish of the wing coverts, in contrast to the general dark green of *T. formosae* (cf. Arakaki 1975: 29–30). OSJ (1974: 162) do not record this species for the Ryu Kyu Islands. Goodwin (1970: 325) included the Ryu Kyus on his range map of the species and Short (1973) recorded it from Okinawa.

Treron formosae: small flocks of 6–8 at Asato and Seisui. Its long, drawn-out, deep, mournful whistles were heard a number of times at Seisui. The calls sounded like extended versions of the mournful notes of *T. sieboldii* (Goodwin *loc. cit.*). One flock of 8 at Asato kept in a tight group as the birds flew from one tree to another to feed.

Hirundapus caudacutus: one over a field near the airport.

Hirundo rustica: small numbers at Seisui and Sumiyo.

Hirundo tahitica: small numbers at Naze; one, Asato; one near Yuwan.

Motacilla cinerea: small numbers at Seisui, Asato and Naze.

Anthus hodgsoni: one flushed from a field at Seisui.

Hypsipetes amaurotis: common and widespread.

Erithacus komadori: fairly common and widespread. It tends to keep low in the undergrowth of forest, forest edge and near recent and old clearings. Short (1973) recorded two main song types, and these were often heard, as well as variations (Bruce 1975). A male observed at Seisui hopped along a thick branch keeping its tail held downward, and only occasionally flicking it to the more characteristic upward position of robins.

Monticola solitarius: one, Seisui; five, Naze area. All but one were males.

Turdus chrysolaus: six, Koniya, in a small flock with *T. pallidus;* one near Yuwan.

Turdus pallidus: fairly common in forest, forest edge and clearings. At Koniya, four in a small flock with *T. chrysolaus*. One, near Naze, observed noisily turning over leaves at the base of a stump, occasionally plucking an item of food. Its foraging was so intensive that I was able to approach it quite closely before it flew off, always keeping close to the ground, from which I usually flushed the species.

Cettia diphone: fairly common in forest edge and grassy second growth. Its singular chipping notes were often heard at Seisui, quite a contrast to the songs I heard on Okinawa (Bruce 1975).

Cisticola juncidis: one or two, Seisui.

Ficedula narcissina: one female, Seisui.

Terpsiphone atrocaudata: Kinsakubaru Reserve: call heard attributed to this species, a loud, clear, ascending series of whistled notes, confirmed later by a recording (cf. Yamashina 1961: 93). I briefly observed what was probably the short-tailed female of this species flying through the fairly dense forest canopy.

Parus varius: two, probably more, Seisui; one, Naze. Apparently as common as *P. major*, but it is a more secretive species, preferring the thicker undergrowth of forest and forest edge.

Parus major: common and widespread. Often observed feeding in small bushes and the outer branches of trees. Also noted singing from exposed branches, especially early in the morning.

Zosterops japonica: common and widespread. Popular as a cage bird and often locally trapped.

Emberiza spodocephala: two, possibly three, near Naze.

Passer montanus: common in towns and villages.

Garrulus lidthi: common and widespread; the most conspicuous and dominant element of the avifauna. Its grating calls were often heard and although usually encountered in forest areas, it occurs in all types of habitats. A more detailed account of this interesting species will appear elsewhere (Bruce in prep.).

Corvus macrorhynchos: common and widespread. A flock of 56 observed overhead at Seisui; 30+ observed on the beach at Koniya.

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Observations and comments on two stream-adapted birds of Papua New Guinea

by Ronald I. Orenstein

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During a brief visit to Papua New Guinea in October 1973, I made observations on the Riverine Flycatcher *Monachella mulleriana* (Muscicapinae) and the Torrent-lark *Grallina* (*Pomareopsis*) *bruijni* (Grallinidae). These two species are found almost entirely along the beds of fast-flowing streams, where they fill the niche occupied by such birds as dippers (*Cinclus*), forktails (*Enicurus*) and water redstarts (*Chaimarrornis* and *Rhyacornis*) in other parts of the world. Only scraps of information have been recorded on the behaviour of the Papuan birds (Diamond 1972; Mayr & Gilliard 1954; Mayr & de Schauensee 1939; Rand & Gilliard 1967; Mackay 1970). I was interested in whether they shared features characteristic of stream birds in other areas—specifically tail-wagging or similar activity, and high-pitched or otherwise penetrating vocalisations. Elsewhere (Orenstein in prep., a) I will be attempting to interpret these behaviours on a worldwide scale; however, as the paper cited is very general in its coverage, I am presenting summaries of my field observations on the Papuan stream birds here.

I observed Riverine Flycatchers along two streams in the foothills of the Astrolabe Mountains near Port Moresby: the Goldie River, on the Kokoda Trail near Uberi (10 October), and Ei Creek in the Sogeri area (11–12 October). Torrent-larks were also present on Ei Creek and I briefly observed a pair of them on Mount Kaindi, near Wau, on 18 October.

Monachella mulleriana

On the Goldie River, I watched a party of two adult and two immature Riverine Flycatchers, presumably a family group. The river at this point was about 13 m wide, with a rippling flow interrupted by scattered large boulders. The birds perched on rocks, on limbs up to 5 m over the water, or on a cable-car wire stretched across the river. They foraged by aerial flycatching, and at times flew several metres from the bank. The bulk of their time, however, was spent on or above the river bed. They called frequently—a high-pitched, thin and penetrating 'tee-tee-tit', the number of notes varying from one to six. This call, often given in flight, was far-carrying and easily heard over the background noise of the waters. In fact, so similar in this respect is the call to that of other stream birds (*e.g.* the Plumbeous Water Redstart *Rhyacornis fuliginosus*—pers. obs.) that I was able to locate the species by voice before I ever saw one. While perched, particularly on rocks, the birds frequently gave a single bob of the tail, cocking it up through a shallow angle and returning it to a resting position. A shallow tail-bob was often given just after landing. If two birds sat together, they would tail-bob alternately. I observed the two immatures sitting side by side, facing opposite directions and giving alternate tail-bobs several times in succession. In this context the tail-bob almost certainly serves as some sort of contact or reinforcement signal between members of a group. The tail was not fanned during bobbing.

On Ei Creek, a stream quite similar in appearance and dimensions to the Goldie River, I observed a group of two adults and one immature on 11

October. Their behaviour was similar to that of the Goldie River birds. They indulged in frequent tail-bobbing, with the wings folded either above or below the tail. On 12 October I found either the same party or an adjacent one, now with four birds; the fourth bird was probably an immature, but it was not well seen. They often sat motionless, usually on a rock in midstream but at times on a branch. Tail-bobbing was performed primarily on landing or as part of the display described above, in which two birds sat together, usually facing opposite ways, and alternately gave single tail-bobs.

These flycatchers are extremely conspicuous against the dark background of the stream. The grey of the back is not very noticeable in the field, the birds appearing entirely black and white. In flight over the stream, the white of the body almost gleams. The immatures differed from the adults in having pink legs, black lores and eye-stripe, and a dusky crown streaked with white. Immatures on the Goldie River showed no trace of the large white supra-loral spot; the immature at Ei Creek was just beginning to develop it.

Grallina bruijni

A male Torrent-lark was observed, though at a considerable distance, for several minutes along Ei Creek on the morning of 11 October, on the same stretch as that occupied by the party of *Monachella*. The two species often approached one another closely, with no observed interactions between them. On the afternoon of 12 October I watched the female at closer range for about 30 minutes in the same area. This species is very much a miniature of the Australian Mudlark *Grallina cyanoleuca* in its posture, body shape and strutting gait. Both sexes foraged methodically over the rocks of the stream bed, apparently taking prey both from the rocks and the surface of the water. Although where possible they would lean down from a rock to the water's edge, they showed no hesitation in entering the water at least to belly level (*contra* Rand & Gilliard 1967). Both birds eventually flew off upstream with a slow, buoyant flight; the male short-cutting across a bend, but the female following the course of the creek at the same point. In addition the female made several short fluttering flights from boulder to boulder, its white rump and shoulder-patches flashing conspicuously.

Both sexes kept up a continual tail-wagging while exploring the stream bed, to such an extent as to give the tail almost a life of its own. The male appeared to move its tail up and down through a shallow angle; this activity was kept up even when the bird paused to preen. The female's tail-wagging appeared more complex, though I should point out that it was observed at much closer range. Its tail was more often moved from side to side, through an angle of about 30°, than vertically. At times the tail was moved in a flattened circle, the result of simultaneous horizontal and vertical movements. Side-to-side tail-wagging was usually performed with the tail slightly depressed, rendering the moving, white rump more conspicuous. Once, upon landing, the bird gave three especially vigorous side-to-side wags, followed by two or three vertical ones. Vertical tail-wagging on its own, however, was neither as frequent nor as vigorous as the horizontal movements.

I heard no vocalisations from the female. However, the male called several times, a nasal, buzzy 'k-zaaat', not as piercing as the call of *Monachella* but still audible over the noise of the stream. Accompanying each call was a striking display: the bird raised its head, pointing the bill upwards, and quickly spread its broad wings to their full extent, holding them aligned vertically with the underside facing anteriorly. The wings were closed on

completion of the call. This display, vaguely reminiscent of that of a Riflebird (*Ptiloris* sp.) (Gilliard 1969), presumably renders the white shoulder patches most conspicuous when the bird is viewed from behind. However, the bird always faced me when calling (certainly fortuitously); even though the underside of the wing is wholly black, I still found this wing-flash most arresting. Diamond (1972) noted an apparently similar display given by a bird facing two others.

The pair of birds seen briefly at Wau called with a harsh 'kzzt' when flushed from a tiny rivulet.

DISCUSSION

Both the Riverine Flycatcher and the Torrent-lark possess behaviours similar to those of many other stream-adapted species. In addition, the highly conspicuous, black and white plumage of these birds is reminiscent of *Enicurus* and other occupants of rushing streams. Elsewhere, (Orenstein in prep., a). I will discuss the adaptive significance of such features. Here it is sufficient to say that the observations cited support the contention that contrasting plumage, tail-wagging or similar behaviour, and penetrating calls are universal, or nearly so, in birds of rushing waters, and that they together represent adaptive responses to stream conditions. Primarily, they act as advertising or contact signals adapted to overcome the difficulty of intraspecific communication against the background noise of their environment. It is difficult to interpret the alternate tail-bobbing of *Monachella* or the exaggerated wing-flash accompanying vocalisation in *Grallina* as anything other than such an advertising or contact display. In the case of the "song-display" of the Torrent-lark there is probably an aggressive or territorial component, although the display observed by Diamond (*loc. cit.*) was apparently between members of a family group. Diamond does not say whether or not any vocalisation accompanied this display. In any case, the "song-display" is considerably more exaggerated than any such display in its congener, the Australian Mudlark (*Grallina cyanoleuca*), a species I observed repeatedly during two years in Australia. In a probably homologous territorial display, the Australian species raises its wings but may not open them fully, if at all (Robinson 1947). *G. cyanoleuca* is not a bird of rushing streams; it does not wag its tail as does *G. bruijni*.

Tail-bobbing in the Riverine Flycatcher may be more important for contact between members of a family group than as a territorial signal. There is some evidence that this species may be social. Diamond (*op. cit.*) records groups of up to eight birds. However, my observations lead me to suspect that these may be expanded family groups, which probably defend territories against adjacent groups. Strong territoriality is the rule in stream birds (Orenstein in prep., a). Further study is necessary to establish the nature of the social structure in this species. Whatever the nature of intraspecific territoriality in the Riverine Flycatcher and the Torrent-lark, it is interesting to note that the two species can coexist on the same stretch of stream. However, they differ considerably in both size and foraging technique, and there is unlikely to be much competition between them.

My observations of the Torrent-lark make it very difficult for me to regard this species as generically separable from *Grallina cyanoleuca*, although many authors (including Rand & Gilliard 1967) have placed it in a monotypic genus, *Pomareopsis*. In almost every way it resembles the Australian bird, the major exceptions being in those behaviours—e.g. tail-wagging—which are specific adaptations to a stream habitat. Other differences, such as the

considerable size difference between the two species and the rather more marked sexual dimorphism of *G. bruijni*, seem inadequate for generic separation. The considerable difference between the male and female Torrent-larks with respect to the amount of black on the underparts may be correlated with the rearing aspect of the song display. I follow Amadon (1950) and Diamond (1972) in including the Torrent-lark in *Grallina*, and regard the two species of this genus as probably closely related. In any case, the tail-wagging behaviour of *G. bruijni*, a specific adaptation to stream conditions, cannot be used as evidence to ally *Grallina* with the Motacillidae, whatever other reasons there may be for making such an association (*cf.* Chapman 1974).

Monachella is not as obviously allied to any other single species. Most authorities have placed it within the complex of Australasian "robins" (*e.g. Petroica*, *Eopsaltria*, *Tregellasia*, *Poecilodryas*) and the closely related *Microeca* (Diamond 1972, Mathews 1930, Mayr 1941, Rand & Gilliard 1967). This complex includes the most terrestrial of the Australasian flycatchers (with the exception of some *Rhipidura* spp.), and one species, *Petroica archboldi*, is a bird of barren rocks above the treeline. The alternate tail-bobbing of *Monachella* is vaguely reminiscent of alternate wing-flash displays I have observed between members of a pair in *Petroica macrocephala* and the probably related *Eugerygone rubra* (Orenstein in prep., b). There has not been any consensus, however, as to exactly which genus of robins is closest to *Monachella*. In plumage pattern it is most closely approached by the two species of *Tregellasia*, a genus sometimes included in *Eopsaltria* (Macdonald 1973) and obviously closely allied to it. *T. capito* has large pale supraloral spots, and a crown otherwise notably darker than the rest of the upperparts; in *T. leucops* the crown is almost black and the supraloral markings are white and considerably expanded in area. An increase in contrast between the crown, wings and tail of the *Tregellasia* plumage, coupled with a loss of yellows and greens, would produce a pattern quite similar to that of *Monachella*. The legs of both *Tregellasia* spp. are pale, variously recorded as yellow or flesh colour, as are those of the immature *Monachella* observed by me (Iredale, 1956, records the leg colour of immature *Monachella* as "ashy" but other details of his description of this bird are incorrect.) The light rump of *Monachella* is similar to that in some forms of *Eopsaltria australis*. The *Eopsaltria* complex includes one other species which has lost all yellow or green colour, the greyish *E. georgiana* of Western Australia. If *Monachella* was indeed derived from a stock close to *Eopsaltria* and particularly *Tregellasia*, its development of a pied plumage supports the contention that such a pattern is adaptive to stream conditions (Orenstein in prep., a), a statement not specifically supported by the two *Grallina* spp. A similar trend is shown by the neotropical tyrannid genus *Serpophaga* (Smith 1971). The chief morphological differences between *Monachella* and *Eopsaltria* are a broader bill, longer wings and shorter tarsi in the former genus. These rather swallow-like features may also be regarded as adaptations to foraging in the open conditions of a stream bed; the shorter, rather weaker tarsi also reflect the loss of the widespread habit in *Eopsaltria* and *Tregellasia* of perching on the sides of tree trunks. I therefore consider it probable that *Monachella* is fairly close to *Eopsaltria* in the broad sense, including *Tregellasia*, with its distinctive features explainable as adaptations to its unusual habitat; however, in the absence of agreement among recent workers as to generic limits within this complex, and bearing in mind the greater degree of divergence between *Monachella* and its probable

allies compared with *Grallina bruijni*, I prefer to retain the Riverine Flycatcher in a monotypic genus.

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The problem of the cassowary in Seran

by C. M. N. White

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The cassowary *Casuarius casuarius*, inhabits New Guinea, the Aru Islands, and north Queensland, Australia, all localities lying on the Sahul Shelf and linked by land during the Pleistocene lowerings of ocean levels. It also occurs on the island of Seran in Wallacea, which does not lie on the Sahul Shelf, is separated by about a hundred miles of deep sea from the nearest point in New Guinea, and was never linked by land during the lowering of ocean levels, though the water gap would have been slightly narrowed. Mayr (1940: 1–4) commented, in a brief taxonomic review of the cassowaries—"It is somewhat difficult to understand how a cassowary should have come across to Seran, Moluccas, without changing more from its New Guinea relatives than it has. I consider it distinctly possible that the Seran cassowary is nothing but a descendent of captive cassowaries probably imported from the Onin peninsula of New Guinea. The close trade connections between the

natives of Seran and of that part of New Guinea are well established". The suggestion thus put forward has not been subsequently discussed.

Cracraft (1974) argued that flightlessness evolved once only in the suborder Ratiti, and stated that Australia began drifting north from East Antarctica in the Eocene at about 40–45 m.y. ago. This was considerably later than the separation of the Ratites in Africa and South America. On this view the ancestors of cassowaries could not have been capable of flight when the Australian continent reached its present position relative to Seran. There is no evidence that Seran ever formed part of the drifting Australian continent, and Mayr (1944: 165–166) pointed out objections to the postulating of land connections for which no geological evidence exists.

Subsequently Mayr (1945: 1) commenting on the presence of *Casuarius bennetti* in New Britain, wrote "Cassowaries are good swimmers, and there is little doubt that *bennetti* reached New Britain by swimming. Naturally the chances for the success of such colonisations are very slight, particularly since a pair must have bridged this water gap simultaneously". The same hypothesis might be applied to the cassowaries in Seran. But evidence for possible introduction of *C. casuarius* in Seran by way of mercantile activities is considerable, and is examined here. In a later note it will be shown that mercantile activities could also account for the presence of *C. bennetti* in New Britain.

Linnaeus named *Struthio casuarius* in 1758. Cassowaries had been known and traded for some centuries earlier both to Asia and to Europe. Salvadori (1882: 481) noted that the first live cassowary reached Europe in 1597, brought by Dutch sailors who had acquired it in Java, where it was said to have been brought from Banda. Stresemann (1914: 36–42) outlined some of the history of trade in cassowaries through which they were made known in Java, Sumatra, Malaya and even China, as early as the fourteenth century. He himself saw a young cassowary in a street in Ambon, and a local sailing vessel off south Buru with ten young birds on board. But the original sources of cassowaries traded to Asia and Europe were not known, and Linnaeus gave as localities "Asia, Sumatra, Molucca, Banda". He was evidently not familiar with the writings of F. Valentyn in 1726, where Seran is mentioned as a known locality, and the Aru Islands as a reputed locality. Salvadori (1882) recognised that among the Linnaean localities only Seran in south Moluccas was inhabited by cassowaries, and Rothschild (1900: 115) restricted the type locality of *C. casuarius* to Seran. In the light of what is now known of early trade in eastern Indonesia, there is however no reason to suppose that all the cassowaries traded either prior or subsequent to Linnaeus must have come only from Seran. Some could have come from the Aru Islands and New Guinea.

Ellen & Glover (1974: 36–42) reported that the development of trade in the Indonesian Archipelago has generally been ascribed to the period of change in the region during the twelfth century, with most of the traders Javanese. They also referred to a seventeenth century Dutch account of these traders going to the Moluccas, Ambon, Seran and Aru Islands, and obtaining commodities from New Guinea brought chiefly by people of Goram. They cited evidence that the people of McCluer Gulf area, West Irian (about a hundred miles from Seran) were in direct trading contact with the Moluccas and politically dependent on them even before the development of the Javanese mercantile contacts in the twelfth century. It can be noted that in that part of New Guinea there is a considerable area of wild nutmeg, probably

an old introduction by Moluccan settlers whose descendents still live in the Fakfak district. Wild nutmegs were traded through Ambon as part of this early commerce (Brookfield & Hart 1971: 157). I am grateful to Dr. Roy Ellen, an anthropologist who has recently done field work in Seran, for the comment (*in litt*). "sometimes the Nuaulu will domesticate young cassowaries, but they are either slaughtered or escape before they are adult".

To summarise the foregoing data: by the twelfth century and to some extent even earlier trade links in Indonesia involved contact with New Guinea, the Aru Islands and Seran. Cassowaries were traded in the course of these mercantile activities, and could thus have easily established a feral population of escaped birds in Seran. By coincidence a recent observer in Seran recorded that domesticated cassowaries sometimes escape. Thus there is ample evidence that Seran cassowaries could have reached the island through human agency.

If Seran cassowaries are descendents of escaped captive birds, they should not represent a taxonomically distinct form although current taxonomy treats nominate *casuarius* as confined to Seran. Unfortunately it seems impossible to ascertain what if any characters distinguish the Seran birds. Almost all adult cassowaries in museums labelled as from Seran are completely devoid of data to show that they actually came from that locality. The specimens in question were originally imported alive by dealers or came from zoological gardens. In the British Museum (Natural History) there are two mounted birds from the Rothschild Bequest marked "Taken in Ceram". One came from the Zoological Gardens, Antwerp, the other lacks any further information. Rothschild's approach to the taxonomy of cassowaries was to set up a number of phenotypes which he believed to represent distinct taxa, and to assign supposed localities to them. I consider that the label 'Taken in Ceram' merely indicates that these two birds correspond to Rothschild's conception of Seran birds, and are of little value.

Dr. G. F. Mees has kindly informed me that there are several cassowaries in the Leiden Museum supposedly from Seran but "they are either without information as to exact provenance or came to us through zoological gardens". Van Bemmel (1948) indicated that specimens from Seran exist in the Museum Bogoriense in Java. Dr. S. Somadikarta has kindly informed me that these consist of two examples on exhibition and without data. The only adults unquestionably from Seran which I have traced are the two obtained by Beccari in 1874 and described by Salvadori (1882: 479–484). He stated that Seran birds were very similar to those of north Queensland, but smaller and with the bare neck skin more violet blue, less azure. He also adds that Sclater had given these differences in 1868, based on birds in the London Zoological Gardens. Sclater may have had genuine Queensland birds but the others would have been imported alive and merely attributed to Seran.

Salvadori considered that Seran cassowaries and those from Queensland have two separate wattles on the foreneck lying close together in contrast to other forms with either a single bifid wattle or two well separated wattles. Mayr (1940) based his review mainly on the literature and followed Salvadori in relying on the morphology of the wattles. My examination of skins in the British Museum shows that the supposed distinction between two separate but adjacent wattles and a single bifid wattle is inexact. All birds supposedly distinguished in this way normally have a single bifid wattle with the depth of the division individually variable. This is true of Queensland birds and specimens attributed to Seran and to the Aru Islands. I am grateful

to Dr. R. Schodde (CSIRO, Canberra) for the information that all the material of *C. casuarius* which he has examined from north Queensland and New Guinea has "a single deeply forked or bifid wattle". This confirms my examination of skins. The many mounted birds, mostly from the Rothschild Bequest, have the bare head and neck modelled in plaster, and the original condition cannot be verified.

It is unlikely that Seran cassowaries are descendants of birds imported from Queensland. Whilst trade links in the past indicate that they could have originated from the Onin peninsula, New Guinea, it would be unwise to conclude that they did, because there is as yet no information that *C. casuarius* occurs there. This is a poorly known part of New Guinea. On the other hand they might well have originated from Aru Island birds. As already noted Valentyn was familiar with trade in cassowaries and had heard that some cassowaries came from the Aru Islands. When A. R. Wallace visited the Aru Islands in 1857, he reported that cassowaries were not uncommon there, and that numbers of young birds were brought to Dobbo and quickly became domesticated (cited by Salvadori 1882). Both these facts indicate that the Aru Islands were specifically involved in trading live cassowaries. Quite a number of cassowaries in the British Museum received from Zoological gardens are supposed to have been acquired in the Aru Islands.

Although a few specimens from the Aru Islands with reliable data exist in museums they fail to indicate clearly any distinctive characters for the birds from these islands. A semi-adult obtained by von Rosenberg in Wammer had two well separated wattles: Schlegel identified it as *C. bicarunculatus*, but added that the wattles were not as widely separated as in the published figure of the latter, and that the specimen could be named *C. aruensis* if considered a distinct form. An adult collected by Beccari in Wokan had a single bifid wattle. Mayr (1940) called Aru Island birds *C. c. aruensis* Schlegel but gave no diagnosis and mentioned only these two. There are others in the British Museum which suggest that a single deeply divided wattle is more typical of Aru Island birds. They include two immatures collected during the voyage of the *Challenger* (1873–76); an adult, mounted bird brought alive from Wokan to Rothschild by Caley Webster; and a skin labelled "taken at Wokan Sound, July 1914". There are also mounted birds and skins of the bird described by Rothschild as *C. c. violicollis* because the lower side of the neck is magenta instead of scarlet. Rothschild believed that these came from Trangan Island because he thought that Wammer and Wokan were each inhabited by different forms. Most of the *violicollis* lack any authentic data to prove that they came from the Aru Islands. But Rothschild (1912: 50) reported that Kühn had sent him a coloured sketch and a skin of a bird collected on Trangan, and that the sketch agreed with *violicollis*.

Like Mayr (1940) I believe it very unlikely that *C. casuarius* varies from one island to another in the Aru group, since the water gaps between the main islands are very narrow and shallow. The cassowaries living there are clearly variable in characters. A single deeply divided wattle seems to be most usual but specimens have been collected with only a shallow bifurcation and with the wattles widely displaced laterally. The single deeply divided wattle corresponds to Salvadori's two wattles lying close together, and as stated earlier I am not convinced that a clear line can be drawn between this and a more shallow bifurcation. The widely displaced more lateral separate wattles present a different question. Very few such birds have been found and none have any acceptable locality data apart from the bird from Wammer, Aru

Islands, which may not be typical. Warren (1956) stated that the British Museum possessed the type of *bicarunculatus* and four others from the Rothschild Bequest, one not typical. Another is in the Cambridge University Zoological Museum where C. W. Benson has kindly confirmed its existence and informed me that the bases of the wattles are separated by 87 mm. Although Mayr (1940) recognised these birds as *C. c. bicarunculatus* and thought that their unknown home might be in the western Vogelkop, several collectors have worked in the Vogelkop subsequently without finding *C. casuarius*, and A. Hoogerwerf (*in litt.*) has kindly informed me that he found no evidence of *C. casuarius* in the Vogelkop during his residence there. C. *unappendiculatus* is known from the west and north Vogelkop, however, and if Diamond (1972: 39) is followed in considering this and *C. casuarius* as allospecies, the latter is not to be expected in the Vogelkop. Whilst the status of *C. bicarunculatus* still remains uncertain, it should not be overlooked that a rare abnormal displacement of the wattles rather than geographical variation may account for *bicarunculatus*.

Variation in the colour of the bare head and neck in cassowaries is still very imperfectly understood. It seems that in the Aru Islands the rugose skin of the lower side of the neck may be either scarlet or magenta, and that this variation is individual rather than geographical. It is unlikely to be seasonal or due to age, as no instances of captive cassowaries changing in this respect have been reported. Salvadori described this area in his Seran birds as "rubro-violacea" which agrees quite well with the Aru Island birds.

To summarise: No distinctive taxonomic characters can be established to separate Seran cassowaries from those of the Aru Islands. The latter are very variable and material known to have come from Seran is very scanty. If as is probable the Seran birds are feral descendents of imported captive birds, they are likely, on existing evidence, to have originated in the Aru Islands. In the present, most unsatisfactory, taxonomy of *C. casuarius*, a first step towards improvement would be to treat nominate *C. casuarius* as applicable to birds of both Seran and the Aru Islands. It would also, I believe, be desirable to regard *C. bicarunculatus* as based on birds of uncertain taxonomic status rather than as a formal subspecies of *C. casuarius*.

ACKNOWLEDGEMENTS

In addition to those thanked in the text for comments and information I am particularly grateful to Dr. D. W. Snow and Mr. I. C. J. Galbraith for the facilities which I enjoyed at Tring when examining cassowaries in the British Museum (Natural History).

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The identity of *Carpophaga intermedia* Meyer & Wiglesworth

by C. M. N. White

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Meyer & Wiglesworth, in 1894, described a new Imperial Pigeon as *Carpophaga intermedia,* basing it upon a single specimen from Kabruang in the Talaut Islands. Later (1898: 619–620) they discussed a series of seven examples from the type locality and from Karkellang. They pointed out that they had specimens of *Ducula concinna* from the same islands, and emphasised that the affinities of *intermedia* were with *Ducula aenea.* Hartert (1898: 91) reported specimens of *concinna* and *intermedia* from Lirung, Talaut Islands: he stated that *intermedia* was most closely related to *D. aenea.*

Geographical variation in *D. concinna* is insignificant; in *D. aenea* it is sometimes pronounced. But the two species can be easily distinguished by the junction of the frontal feathers with the culmen. In *D. concinna* the frontal feathers narrow to a point at the culmen: in *D. aenea* the base of the culmen divides the frontal feathers, which narrow on either side of it. Siebers (1930: 180, fig 5) illustrates this difference. In this respect *intermedia* agrees with *D. aenea.* Meyer & Wiglesworth noted this, and recent examination has confirmed the fact. For reasons unknown, Peters (1937: 45) listed *intermedia* as a subspecies of *D. concinna,* giving the distribution as Talaut Islands, yet, immediately below, included Talaut Islands in the distribution of nominate *concinna.* This anomaly seems to have escaped correction. Specimens in the American Museum of Natural History have for years been identified as *D. concinna intermedia.* Goodwin (1960: 1967) made no reference to *intermedia,* but I am grateful to him for informing me (*in litt.*) that there appear to be no specimens of either *D. concinna* or of *D. aenea* from Talaut Islands in the British Museum (Natural History), and that he probably accepted Peters' arrangement as correct.

I am very grateful to Mrs. M. LeCroy for information about the specimens of *intermedia* in the American Museum, New York, and am equally grateful for information about those in the Staatliches Museum für Tierkunde, Dresden, to Mr. Siegfried Eck, Keeper of the mammal and bird collections there. Both have provided very full documentation and agree that *intermedia* is a form of *D. aenea.* Only three of the original seven specimens at Dresden still survive and the type has been missing since 1945. It is now possible to redefine *D. aenea intermedia* in comparison with nominate *aenea* to the north in the Philippines, and with *D. a. paulina* in Celebes to the south of the Talaut Islands.

Intermedia lacks the rusty red nuchal patch present in *paulina:* the back is a dull metallic blue and green with a grey bloom, less bright and irridescent than in *aenea,* and still less so than the strongly metallic copper and green of *paulina:* the under tail coverts are a dark mahogany brown, not dark chestnut: the underside of the tail is black, not brown with a yellowish cast: the feet are dusky with a red hue (Meyer & Wiglesworth), black in skins (LeCroy),

not red fading to yellow in skins: the vinous suffusion of the underside is lighter than in *paulina: intermedia* is larger as shown by the following wing measurements.

paulina	30: Celebes	207–235 mm.
aenea	many Philippine birds (Parkes 1965)	220–252 mm.
intermedia	5 AMNH	256–271 mm.
	7 (Meyer & Wiglesworth)	

Peters (1937: 47) included Talaut Islands in the distribution of *D. aenea paulina*. This is certainly incorrect, for *paulina* has not been found there. It has, however, been collected on a number of small islands just north of the Celebes (Talissi, Lembeh, Banka, Manado tua, Mantehage). Possibly these were confused with Talaut Islands.

It is worth noting that at the end of the last century three not very dissimilar Imperial Pigeons were found sympatrically in the Talaut Islands, *D. aenea*, *D. concinna* and *D. pickeringi*. It seems advisable to note that this was eighty years ago, for much environmental change may have happened since then in these small islands.

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The habitat preferences of different colour morphs of *Egretta garzetta* on the Tanzanian coast

by W. G. Harvey

Received 10th November 1975

Holyoak (1973: *Ibis* 115: 419–420) showed that there were significant differences in the morph ratios in populations of *Egretta sacra* on different Polynesian islands and that these differences were related to the sand colour of the beaches; with significantly more white herons feeding on light coral beaches.

The closely related *Egretta garzetta* is the commonest littoral feeding heron in the Dar es Salaam area of Tanzania. It feeds on white coral sand flats (there is no dark sand in this area), on eroded coral platforms, in creek estuaries in the mangroves, in brackish lagoons and in man made saltpans. Both light and dark morphs occur and in more than three years observation, from August 1970 to November 1973, I estimated that dark morphs accounted for between 25% and 30% of the total population in the area. Dark morphs vary in shade from dark slate grey to pale lavender grey, although the palest grey morphs have only been observed in small numbers between May and September and may be birds of the year.

During the period of my observations I noticed a tendency for the dark morphs to be more numerous in the mangroves and along creek edges and

for white morphs to far outnumber them on the open white coral sandflats. Unfortunately I did not make regular counts but Table 1 summarises the results of what counts I did make.

TABLE

Feeding area	*No. of Counts*	*No. white*	*No. dark*	*% white*	*% dark*
Msimbazi sandflats	6	185	55	77	23
Msasani sandflats and lagoon	3	144	11	93	7
Kunduchi mangroves	5	16	104	13.3	86.7
Msasani mangroves	3	30	50	37.5	62.5

Msimbazi sandflats are an area of open white coral sandflats and counts were made monthly from May to August and in October and November. There is a small area of muddy creek included and here the dark morphs were concentrated. Msasani sandflats were also an area of open white coral sand in a bay. The brackish lagoon included in the counts was used as a tide roost by herons from the sandflats. Counts were made twice in October and once in March.

The Kunduchi mangroves are a large area of mangrove woodland and scrub with associated muddy creeks and salt workings. The mud is very dark grey. Counts were made monthly from April to July and in October. The Msasani mangroves are a much more limited area, close to the brackish lagoon, of largely cut down mangrove scrub with associated muddy shallows and creeks. Counts were made in November and December.

The counts confirm that there is a significant difference in colour morph ratios related to feeding habitats. White morphs clearly favour open feeding situations with shallow pools and white coral sand. Dark morphs clearly favour more shaded localities, where the mud is darker, particularly among mangroves and their associated pools and creeks.

It is unlikely that, nowadays, healthy *Egretta garzetta* are preyed upon by anything in the Dar es Salaam area but in the fairly recent past rapacious mammals such as hyenas, jackals, leopards and large mongooses could have been regular predators. The habitat preferences of the different colour morphs may therefore represent protective adaptation. Certainly the dark morphs are much less conspicuous in the mangroves than the white morphs and much more conspicuous on the open flats where a large scattered flock of white morphs can seem to disappear in the bright light within a short range.

All *Egretta garzetta* feed wading in shallow water but I have noticed one difference in feeding techniques of the different morphs. When feeding in relatively open habitats the dark morphs will often raise their wings to shade the water when fishing but I have never seen white morphs, which are much more numerous in open habitats, behaving thus. This fishing technique is most highly developed in another dark heron, *Hydranassa ardesiaca*, which occurs in very small numbers in the same area and like dark morph *Egretta garzetta* favours mangroves and muddy creeks and avoids open sandflats.

A Fruit-bat as prey of the African Hawk-Eagle

by M. Louette

Received 2nd September 1975

During investigations at Koza (10° 52′ N, 13° 53′ E) for the Belgian F.K.F.O. Project No. 955 (Zoological Study of Cameroun), on 17 September 1974, a large roost of *Eidolon helvum* (Chiroptera) was detected in a tree in the middle

of the town. The tree was also being used as a roost by two specimens of African Hawk-Eagle *Hieraaetus spilogaster*, which rather remarkably did not move when we stood below them. One of the birds was shot and the other then flew off about 30 metres, but returned almost immediately to the tree and settled again in it. People in Koza told us that the eagles had been frequenting the tree for quite a long time.

The specimen collected, which proved to be a female, has been deposited in the Koninklijk Museum voor Midden-Afrika in Tervuren. It is almost adult, although still showing some rufous on the under-wing, the thighs and around the black spots of the underside. The total weight of the bird was 1750 grams, more than the maximum (1662 g) recorded up to now, according to Brown & Amadon (1968). The other measurements fall well within the range for the species (all measurements in mm):

Wing	*Tail*	*Tarsus*	*Culmen from cere*	*Hind claw*
454	258	107	33	39

Moult details were recorded as follows: Primaries (from centre) 1–8 new; 9 = 1/3 (growing); 10 = old. The ovaries showed no signs of enlargement. A fair amount of fat was present around the intestines.

The stomach contained large pieces of flesh, together with bits of skin and a complete hind leg which could be identified as those of *Eidolon helvum*. The hunting methods and food of the African Hawk-eagle have been recently summarised by Steyn (1975), who makes no mention of any species of bat having been recorded among its prey. However, he does point out that the prey is very varied and remarks that "any eagle will tend to harvest a locally abundant and easily secured species".

Nevertheless, the hunting technique of literally sharing a roost with its prey and presumably just picking off a bat now and again when hungry, can only be considered very extraordinary for an eagle which is usually described as a bold and dashing hunter. That the technique was rewarding is proved by the bird's weight and deposition of fat, although it could also be said to have caused a fatal loss of normal vigilance in the presence of humans.

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Birds of the Sierra Nevada de Santa Marta, Colombia: corrections and clarifications

by Kenneth C. Parkes

Received 4th November 1975

W. J. E. Norton (1975) has provided some valuable field notes on the birds of the isolated Sierra Nevada de Santa Marta in northern Colombia. Unfortunately his paper contains several minor errors and one major misconception, which I propose to correct in this note.

Norton naturally relied heavily upon the paper by Todd & Carriker (1922), the standard work on the birds of the Santa Marta region, and makes frequent comparisons between his own data and those presented by Todd & Carriker. After his initial citation of the paper, however, Norton uses only Todd's name. It is obvious that Norton overlooked the introductory

portions of this book, as he consistently credits field observations to Todd, employing such phrases as "Not seen by Todd over 2,000′." As is made clear on pp. 4–5 of Todd & Carriker's book, the field work and collecting were done *entirely by Carriker*, with Todd having been responsible for the technical portion of the joint paper (taxonomy, nomenclature, bibliography, and the theoretical discussion of life-zones). Mr. Todd (with whom I shared an office from 1953 until his death in 1969 at the age of 95) never visited any part of South or Central America, fearing the recurrence of the malaria that he had contracted as a young man in Washington, D.C. (see Parkes, 1970). M. A. Carriker, with whom I frequently corresponded but never met, as he resided in Colombia, died in 1965. He was perhaps the most productive collector of neotropical birds of the first half of the twentieth century, having begun in Costa Rica in 1902 and continued almost until his death. He was far more than a mere professional collector, however, as his meticulous field notes in the Santa Marta book attest. He published a substantial number of ornithological papers in his own name, and in his later years became an expert on the Mallophaga. Mr. Todd would have been the first to insist that this correction be published in order to give Carriker full credit for the field observations in the joint Santa Marta paper.

There are a few misspellings or typographical errors in names in Norton's paper. On p. 113, for "*erinomus*" read *orinomus;* for "*cacolelus*" read *cacozelus;* for "*Psaracolius*" read *Psarocolius*. In the references (p. 115), for "Carricker" read Carriker. More serious, however, is what I have been informed was an editorial confusion, which led to the listing, on p. 114, of "*Basileuterus conspicillatus* (=*basilicus*), Santa Marta or White-lored Warbler." This usage appears to imply that *basilicus* is a synonym of *conspicillatus*. In point of fact, the two endemic Santa Marta species of *Basileuterus* are quite different, and probably not closely related within the genus. The Santa Marta Warbler (*B. basilicus*) has a sharply defined black and white head pattern, and is found in the Lower Temperate Zone between about 8,600 and 9,000 feet according to Todd & Carriker. The White-lored Warbler (*B. conspicillatus*) has a dark grey face, white lores, and a yellow or orange crown patch bordered with black (like many other *Basileuterus*). It is a bird of the Upper Tropical and Lower Subtropical zones between 2,500 and 7,000 feet, and is presumably the species seen by Norton at Donachui (4,800′) and correctly identified by him as such.

Both of the two published coloured figures of *B. basilicus* (Todd & Carriker 1922: pl. VI; Griscom *et al.*, 1957: pl. 34) err in indicating the presence of a bright yellow central crown stripe. In only a single specimen of the type series of *basilicus* is the crown stripe faintly tinged with yellow: in the others it is white or greyish white. *B. conspicillatus* was not figured or mentioned by Griscom *et al.*, presumably because they followed Hellmayr (1935) in considering it to be a race of *B. cinereicollis*. Meyer de Schauensee (1964) gave specific rank to *conspicillatus*, but later (1966) combined it with *B. coronatus* rather than with *B. cinereicollis*. Lowery & Monroe (1968) recognized *conspicillatus* as a full species, placed between *B. cinereicollis* and *B. coronatus*. None of these authors has suggested that *B. basilicus* is conspecific or synonymous with *B. conspicillatus*.

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IN BRIEF

(a) *Empheresula:* new name for *Parasula* Harrison 1975

I proposed (Harrison 1975, *Bull. Brit. Orn. Cl.* 95(3): 53) *Parasula* as a new generic name for *Sula arvernensis* Milne-Edwards 1867, which is a fossil seabird of the Upper Oligocene. Dr. K. C. Parkes has drawn to my attention the fact that this name is preoccupied by *Parasula* Mathews 1913, proposed as a new generic name for *Sula dactylatra*. Milne-Edwards's specimen therefore requires another name and I propose *Empheresula* as a new generic name for the species. The name is formed from the Greek *empheres* (=resembling, like) and the existing generic name *Sula*.

17 September, 1975 C. J. O. Harrison

(b) On the reported occurrence of the Slender-billed Gull *Larus genei* in Tanzania

In view of the uncertainties attaching to some of the recent records of *Larus genei* and the Black-headed Gull *L. ridibundus* in East Africa (see, for example, C. H. Fry & J. Horne, *EANHS Bull.* 1972: 138–139, the identification of an adult Slender-billed Gull *Larus genei* observed on 28 March 1971 on the lakeshore in Lake Manyara National Park, Tanzania, by G. E. Watson (1971: *Bull. Brit. Orn. Cl.* 91(6): 167) seems to need further consideration. As stated by the observer, it would constitute the first record of this species in East Africa (cf. G. C. Backhurst, P. L. Britton & C. F. Mann 1973: *Jl E. Africa nat. Hist. Soc. natn. Mus.* 140: 15). Since that date the occurrence of *ridibundus* has been confirmed by the observation of individuals in full or partial breeding dress (e.g. Fry *et al. loc. cit.*), but the occurrence of *genei* apparently remains problematical (cf. L. H. Brown: *EANHS Bull.* 1973: 39–40).

After considering the evidence in support of Watson's sight record of *genei*, I feel that the inclusion of this species in the avifauna of Tanzania must still be regarded as doubtful for the following reasons. His description of the bird does not, in my view, exclude the possibility that it was in fact an example of *ridibundus*. In non-breeding plumage *ridibundus* can have the dark auricular spot very much reduced or even absent, so that the head looks white. Furthermore, the "proud erect bearing" and slimness of head and neck which were noted are somewhat unreliable criteria for separating *genei* from *ridibundus*, especially as they could only be compared with the Lesser Black-back *Larus fuscus* and Gull-billed Tern *Gelochelidon nilotica* which were also present, both of which species in any case have a fundamentally different

build. In certain circumstances (as, for instance, when an observer is approaching), *ridibundus* can to some extent exhibit the two features mentioned. Finally, the wing-pattern on which conclusive reliance was placed is, of course, very difficult to distinguish with certainty from that of *ridibundus*. Wing-pattern was, however, no doubt sufficient to eliminate confusion with the Grey-headed Gull *Larus cirrocephalus*, another species which has been observed frequently on Lake Manyara between April and November (H.F.I. Elliott pers. comm.) and in which, incidentally, non-breeding birds may also have an almost completely white head (G. R. McLachlan & R. Liversidge, 1970. *Roberts Birds of South Africa*, p. 199).

I am indebted to G. C. Backhurst, H. F. I. Elliott and J. Wattel for comments on earlier drafts of this note.

24 September, 1975 G. J. Oreel

Bulletin of Zoological Nomenclature: Opinions

In continuation of *Bull. Brit. Orn. Cl.* 95, 1975: 40, and by permission of the International Trust for Zoological Nomenclature, the following Rulings are quoted as extracts from Opinions published in *Bull. Zool. Nomencl.* affecting birds:

OPINION 1028

(*Bill. Zool. Nomencl.* 31(4), 1974: 186)

Falco exilis Temminck, 1830 (Aves) suppressed under the plenary powers—

(1) Under the plenary powers the specific name *exilis* Temminck, 1830, as published in the binomen *Falco exilis*, is hereby suppressed for the purposes of the Law of Priority but not for those of the Law of Homonymy.

(2) The specific name *rufiventris* Smith, 1830, as published in the binomen *Accipiter rufiventris*, is hereby placed on the Official List of Specific Names in Zoology with the Name Number 2537.

(3) The specific name *exilis* Temminck, 1830, as published in the binomen *Falco exilis* and suppressed in (1) above, is hereby placed on the Official Index of Rejected and Invalid Specific Names in Zoology, with the Name Number 998.

OPINION 1036

(*Bull. Zool. Nomencl.* 32(2), 1975: 101)

Pternistes afer var. *angolensis* Bocage, 1893 (Aves) ruled a *lapsus calami* for *Pternistes afer* var. *benguellensis* Bocage, 1893—

(1) It is hereby ruled that the subspecific name *angolensis* Bocage, 1893, as published in the combination *Pternistes afer* var. *angolensis*, is a *lapsus calami* for the subspecific name *benguellensis* Bocage, 1893, as published in the combination *Pternistes afer* var. *benguellensis* and that as such it has no status in zoological nomenclature.

(2) The subspecific name *angolensis* Bocage, 1893, as published in the combination *Pternistes afer* var. *angolensis*, declared in (1) above to have no status in zoological nomenclature, is hereby placed on the Official Index of Rejected and Invalid Specific Names in Zoology, with the Name Number 1002.

[illegible]

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